

Progressive Architecture

July 1977 A Penton/IPC Reinhold Publication



Here's why Azrock Alvarado vinyl asbestos tile gives you more floor design versatility.

Exclusive Azrock Alvarado styling is achieved with large and small chips of translucent vinyl, encasing fine particles of actual marble, deeply inlaid in a vinyl asbestos backing.

Gives your clients durable, long-lasting floors with underfoot comfort. Proven by years of use in office and commercial buildings.



8 Alvarado colors coordinate with contemporary interiors and permit easy office layout changes. Available in 1/8" gauge, 12" x 12" size.

Dense, non-porous composition makes floor easy and economical to maintain in like-new condition. No-wax maintenance method cuts costs even more.

Fire-safe, will not support combustion—flame spread rating is less than 2.0 in UL Chamber Test No. 992 and less than 75 in ASTM E-84 Tunnel Test.

Alvarado in Azrock vinyl asbestos tile offers you unlimited design versatility and your client more floor for his money. You can make an Azrock floor the focal point of your design in office buildings or any commercial or institutional interior. Azrock has over 130 contract colors and styles—the largest, most comprehensive selection

available in vinyl asbestos floor tile. For elegant flooring at low cost, specify the best floor for the money—Azrock vinyl asbestos tile. Call your Azrock flooring contractor or write to us for samples of the entire line. Azrock Floor Products, Dept. 401A, P.O. Box 531, San Antonio, Texas 78292.

The vinyl asbestos floor tile specialists



Editor
John Morris Dixon, FAIA

Managing Editor
James A. Murphy, AIA

Senior Editors
David A. Morton, Features, Books
Suzanne Stephens, Features

Associate Editors
Ann Carter, News report
Charlotte VanVoorhis, Products
Henry Lefer, Technics
Martin Filler, Interior Design

Assistant to the Editor
Barbara McCarthy

Editorial Assistant
Judith A. Wasson

Graphics
George Coderre, Art Director
David W. Scott, AIA, Architectural drawing
Eve Ryan, Art and Production

Contributing Editors
Norman Coplan, It's the law
Bernard Tomson, Hon. AIA, It's the law
Josephine H. Drummond, Specifications clinic
William T. Lohmann, AIA, FCSI, Specifications clinic
Alvin D. Skolnik, FCSI, Specifications clinic

Correspondents
Esther McCoy, Los Angeles
Michael Franklin Ross, AIA, Los Angeles
Roger Montgomery, San Francisco
Sally Woodbridge, San Francisco
Antonin Aeck, AIA, Atlanta
George McCue, St. Louis
Peter Papademetriou, Houston
Ralph Warburton, AIA, AIP, PE, Miami
Stuart E. Cohen, AIA, Chicago
Carleton Knight III, Washington

Publisher
Philip H. Hubbard, Jr.

James J. Hoverman, Director of Sales
Jack Rudd, Promotion Director
Daniel H. Desimone, Production Manager
Thomas Moran, Circulation Director
G. Charles Huebner, Circulation Manager
E.M. Dwyer, Customer Service Manager
Elizabeth A. Mercede, Sales Service Manager

Penton/IPC

Progressive Architecture is published monthly by Reinhold Publishing Company, Inc., a subsidiary of Penton/IPC. Philip H. Hubbard, Jr., President; Harry I. Martin, Vice-President. Penton/IPC: Thomas L. Dempsey, Chairman; Sal F. Marino, President; N.N. Goodman, Jr., Benjamin L. Hummel, Joseph P. Lipka, Paul Rolnick, Executive Vice-Presidents.

Executive and editorial offices, 600 Summer St., Stamford, Conn. 06904 (203-348-7531).

For all subscription information write Circulation Dept., Progressive Architecture, 614 Superior Ave., W., Cleveland, Ohio 44113 (216-696-0300). When filing a change of address, give former as well as new address, zip codes, and include recent address label if possible. Allow two months for change. Subscriptions payable in advance. Publisher reserves right to refuse unqualified subscriptions. Professional rate of \$8.50 per year is available to architectural and architectural-engineering firm personnel and architects, designers, engineers, and draftsmen employed in allied fields. Professionals outside U.S., U.S. possessions, and Canada: \$20 per year. Nonprofessional domestic rate: \$17 per year. Nonprofessionals outside U.S., U.S. possessions, and Canada: \$30 per year. Single copy \$4, payable in advance. Indexed in Art Index, Architectural Index, Engineering Index. Second-class postage paid at Stamford, Conn. and additional offices. Volume LVIII, No. 7. Printed in U.S.A. Copyright © 1977 Reinhold Publishing Company, Inc. All rights reserved.

July 1977

Progressive Architecture

7 Editorial: Minority representation

Design and Planning

43 Architecture cross-examined

Richard Meier & Associates' Bronx Developmental Center in New York, a treatment center for the mentally retarded, is also the center of a controversy.

55 Meier's type-forms

Eugene Kupper reviews *Richard Meier, Architect: Buildings and Projects 1966-1976*. The introduction is by Kenneth Frampton; postscript by John Hejduk.

58 English encampments

The Barbican, Thamesmead, and Milton Keynes are new towns that represent three very different contexts of new town planning. By Barbara Goldstein.

68 Monochromatic contextualism

Architects Barton Myers and R.W. Wilkins' theater building in Edmonton, Alberta, Canada, for the Citadel Theatre Company receives rave notices. By C. Ray Smith.

74 Specifications clinic: Revised A201 plays supportive role.

Technics

77 Industrial Evolution

Steven Winter discusses industrialized housing, which here is considered to be housing substantially produced by some form of industrialized pre-assembly.

Departments

8	Views	88	It's the law
21	News report	90	Products and literature
28	AIA Convention	96	Building materials
34	Personalities	98	Job mart
36	Calendar	100	Directory of advertisers
40	In progress	101	Reader service card



Cover: Bronx Developmental Center, New York, by Richard Meier & Associates (p. 43). Photo: David Morton.

**What's different
about every GE
decorative outdoor
lighting system?**

Design.



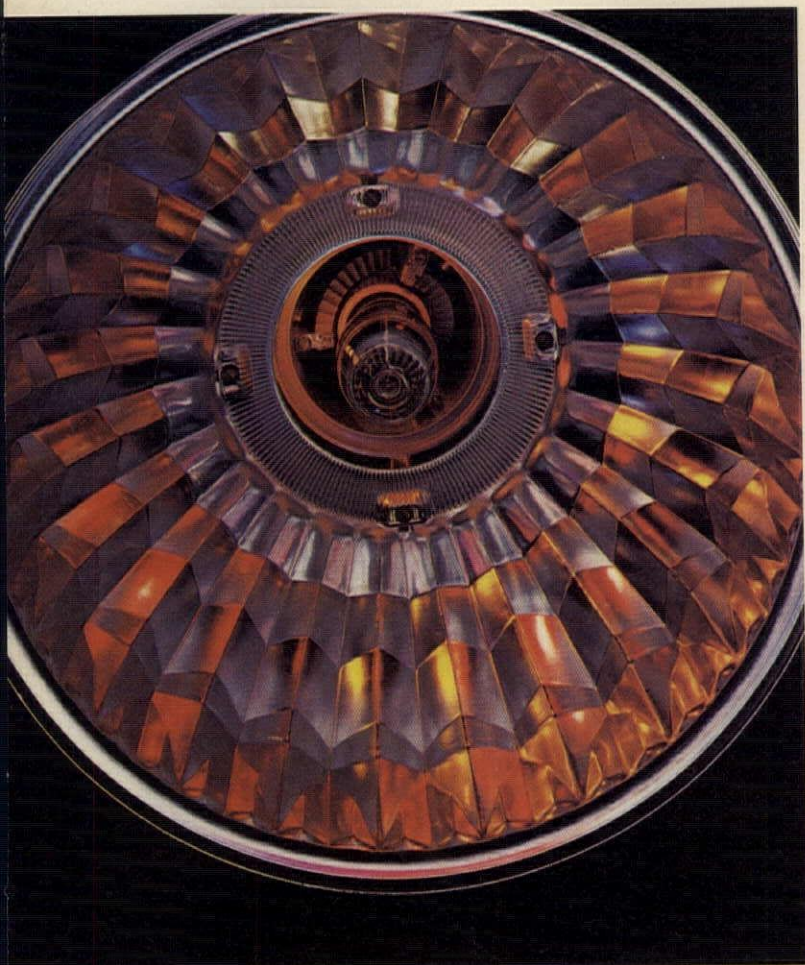
Now you can have it both ways.

Choose any General Electric HID lighting system and you'll have a luminaire that's not only beautiful on the outside, but beautifully efficient on the inside. In today's energy-conscious environment, that's a combination you can't afford to pass up.

Style? Whatever type of setting you're creating, you'll find a GE lighting system that complements it beautifully. There's an exciting array of shapes, sizes, colors and light sources that will strikingly enhance the mood you want your design to convey.

Look inside, too. Because it's here that a

Light control.



System efficiency.



GE HID lighting system will really pay off.

You'll get precise light control, for example. More light where you want it — illuminating the specific lighting task you have in mind. Sophisticated optical systems make sure that the efficiency of the light source is always maximized.

But light control is only part of the inside story.

Put this advanced optical control together with a high-performance ballast design and you also get the most efficient lighting system available. A remarkably energy-efficient system that delivers more light from fewer watts at less cost. In a word, beautiful.

Your settings deserve to be shown in their best possible light. And with General Electric's beautifully efficient HID outdoor lighting systems, they will be. For more information, write: General Electric Company, Section 460-14A, Hendersonville, N.C. 28739.

**There's more
to GE lighting
than meets the eye**

GENERAL  ELECTRIC

All Grace stands behind this product



Zonolite[®] Roof Decks

You must have assurance the products you specify will perform. And when you specify Zonolite Roof Decks, you can be sure they will perform and keep performing.

Zonolite Roof Decks have been performance designed and engineered by Grace. They are tested and classified by Underwriters Laboratories, Inc. and approved by Factory Mutual.

Thorough research and development, engineering, and testing give us the confidence to offer a ten-year W. R. Grace & Co. Roof Deck Performance Warranty on the Zonolite Insulperm[®] Roof Deck over slotted metal substrates.

The Grace warranted Zonolite Roof Deck is designed to speed venting and drying. Meet today's demanding insulation criteria. And be competitive in cost.

Get the whole story from your local Zonolite Representative and from Construction Products Division, W. R. Grace & Co., 62 Whittemore Avenue, Cambridge, Massachusetts 02140. In Canada: 66 Hymus Road, Scarborough, Ontario M1L 2C8.

GRACE

Minority representation

July 1977

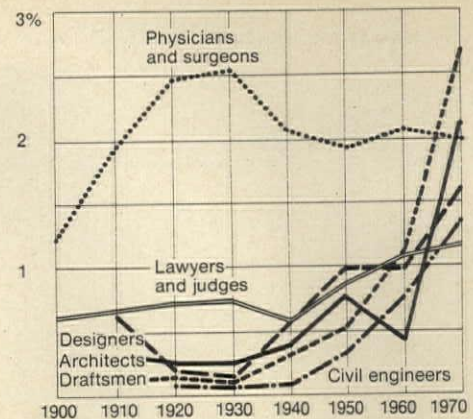


Figure 4 (supplemental): Percentage "Negro" of experienced male labor force, specific occupations, 1900-1970

Source: Forthcoming report, "Architecture among the Professions," by Robert Gutman and Barbara Westergaard.

By the time these words reach you, delegates to the annual convention of the American Institute of Architects will have decided by vote whether a black member is to become their president-elect, scheduled to take office at the end of 1978. (For a report of the convention, see p. 28.) If Robert Wilson wins this contest, it will be a dramatic affirmation of the position of blacks in an organization which had no national black officers at all until 1970.

Whether Wilson wins or not, it will be almost impossible to tell what role racial considerations play in the voting; there will be those who vote against him—or for him—because of his race. His formidable opponent, Ehrman Mitchell, is the first-billed partner in the firm of Mitchell/Giurgola & Associates, winners of the AIA firm award and numerous awards for design—a man who can also match Wilson's substantial contributions to the AIA almost point for point.

If Wilson wins this position, he will be spokesman for a profession comprising less than three percent blacks (chart at right) and an institute with only about one percent black membership. (By comparison, the U.S. Senate is also one percent black, the U.S. population 11.5 percent.)

As the chart indicates, blacks have increased their numbers rapidly among architects, draftsmen, and designers over the years since 1960, while their representation in law and medicine has shown little change. There is a certain irony in this increase among black architectural professionals just in time to encounter a major slump in architectural activity.

An article in the Sept. 1976 *Black Enterprise*, by Richard K. Dozier, Chairman of the Architecture Department at Tuskegee Institute (a far more authoritative article than one usually finds in the "lay" press), reiterates what we have been hearing—that the construction slump of the past few years has hurt black architects more severely than the profession as a whole. During the construction boom of the 1960s, blacks were just beginning to be represented in fair numbers in the architectural schools; many of them came out of school to face a bleak employment situation. Others made it onto the lowest rungs of the professional ladder, only to be dropped as their employers' work gave out. To some extent, this experience parallels that of women entering the profession, but it is compounded by the fact that black firms were hit severely by the Federal moratorium on

housing in 1973 and the subsequent low level of funding for housing, community facilities, and redevelopment, precisely the areas where black firms—or black principals in mixed firms—found their most likely clients.

Black architects, like all other architects, have learned from recent adversity not to depend too much on one type of commission. Yet they retain a special edge in terms of rapport with the inner-city minority groups that are beginning to reemerge as substantial clients for architectural services. One of the positive legacies of the abortive Great Society era is the mandate to deal with the real users of subsidized facilities, and this may give black architects the leverage to regain much of their disproportionate losses of recent years.

Just as we asked whether there is a "women's architecture" as such (P/A, March 1977), *Black Enterprise* asks whether there is such a thing as a "Black Architecture." The answer seems to be "no," or at least "not yet." Don Stull is quoted as observing that "Jackie Robinson didn't hit black home runs." We don't ask I.M. Pei to serve the Chinese-American community, and we cannot impose any comparable obligation on blacks. Those who do involve themselves in the problems of black communities may make some distinctively black contributions to the advancement of architecture—with lessons for all user-oriented designs. Those who don't will have—must have—an equal opportunity to advance the profession as a whole.

John Morris Olf

Views

The future of architecture

I found your May "performance" excellent, in particular the articles "Scenarios without end" (by Suzanne Stephens and John Dixon); "The entrepreneurial profession" (Robert Gutman); and "A come-back for architectural theory" (David Dunster), which stand on their own but are reminiscent of the investigatory issues of the early 1960s which helped make *Progressive Architecture's* reputation.

The "role models," though always risky and difficult to do, were in these cases interestingly presented.

"Future past" by Suzanne Stephens seems to me a concise and perceptive criticism of Centre Pompidou. This piece of criticism, viewed with her recent piece written on Robert Stern (P/A, Feb. 1977) and her earlier writing for *Forum* on some of the UDC housing in New York, must establish her as one of the best critics in the professional journals.

When I add up the number of "acts" contributed by Suzanne Stephens and John Dixon to your May issue, I would say it was a heroic performance and deserving of many curtain calls.
Barton Myers, Architect
Toronto, Canada

I've just begun to get into your issue on the future of architecture. It may be this year's most important publication in the entire field of architecture.

William Bain, Jr., FAIA
Naramore Bain Brady & Johanson
Seattle, WA.

Congratulations. It is the first time I have ever read any architectural magazine from cover to cover. This is even more unusual when I consider how little I have read your magazine. My only quibble is that I wish the images had contained the same energy and attitude as the texts.

Peter Eisenman
Institute for Architecture and Urban Studies
New York, NY.

Future: theory

Although David Dunster's article, "A comeback for architectural theory," (P/A, May 1977) is an excellent article in many respects, Dunster fails to make some basic distinctions in his attempt to define architectural theory.

The first distinction to be made is between the *generative* and *descriptive* aspects of theory. Architectural theory has been defined as a set of principles, a "coherent body of ideas" that guide the architect in generating architectural form and space. But architectural theory may also be defined as an intellectual explanation of architecture itself, an attempt to answer the question "what is architecture?" As such, architectural theory is of a *descriptive* or passive nature as distinct from a generative or active nature. For example, architecture is . . . "commodity, firmness, and delight" (Vitruvius), . . . "building task, semantics, and technics" (Norberg-Schulz), or . . . "pragmatics, semantics, syntactics" (Gandelsonas). The relationship in architectural theory between the generative and descriptive may be dialectical, but nevertheless the distinction must be made in order to make the relationship explicit.

The second distinction refers to Dunster's comment concerning the relationship between buildings and theory. If it is true that "theory" . . . is present in all buildings," and that "any conversation about buildings becomes an excursion into . . . the realm of theory," then one must be careful to make the distinction between the architect's *espoused-theory* and his *theory-in-use*, as well as between the descriptive and generative aspects of the theory.

Such a conversation is architectural theory only in a descriptive sense, even though one might be interested in the generative theory demonstrated in the building. The most difficult task, in my opinion, in such a conversation, is not in extracting from the building a body of principles, i.e. a theory-in-use, but in understanding the relationships between the theory-in-use and the espoused-theory, and between the generative and descriptive aspects of the theory. Again, the relationships may be dialectical, but nevertheless the distinctions can be made and architectural theory can be defined as more than a body of ideas and principles to be used for the production of form.

If one is willing to make these basic distinctions, then it is at least possible to reply to Dunster's final question "what is architectural theory to account for—if not those specifically architectural problems which beset the designer of buildings in the course of designing," by suggesting a definition of architectural theory which may be closer to the original meaning of *theoria*—an intellectual explanation of architecture. Perhaps then, we would witness a genuine "comeback for architectural theory"—for its own sake.

Richard H. Wesley
Visiting Assistant Professor
Department of Architecture
University of Illinois
Urbana, IL.

Future: role model

In any discussion of Jaque Robertson, it is important not to overlook the fact that he carries with him at all times a sense of the best *Architecture* one can achieve in any given situation. He doesn't drop one thing to involve himself in something else which may be more fashionable at the time. His development as an architect is concerned with artistic notions and pragmatic methodologies. He builds upon his experience and when things don't work out he doesn't ignore

his responsibility. Working with Jaque is a grand experience: somehow he never lets go of his frontier spirit which is highly ethical, architecturally speaking. Shahestan Pahlavi, the new Teheran city center, was originally a competition in which Lou Kahn, one of our great individuals, submitted an entry and hoped to win. Llewelyn-Davies International won it and hired Jaque to do it. In the development of architectural principles which underlined the project's design, Jaque applied many of the notions he learned from Lou as a student at Yale—we all did for that matter. Gamesman or individual, the aims have always been the same with Jaque.

Frank Israel, Architect
New York, NY.

I read with great interest the May issue of *Progressive Architecture*, "The future of architecture." The number of journals open to discussion of ideas seems to grow smaller each year, so it is particularly encouraging to see serious intelligent writing on the state of the profession, and especially on architectural theory. I do have, however, one reservation.

Your attempts to cover a range of approaches or "role models" seemed to indicate recognition of increasing pluralism in the profession, and an openness to new possibilities for architectural production and thinking. At the same time, most of the work covered proceeds from the same set of underlying assumptions, i.e. a *de facto* formal, functional, and technological aesthetic. These are, in effect, the "issues" of this architecture.

There are, to be sure, variations on the way these issues are confronted, but the overall realm of aesthetic inquiry remains the same. Architecture is still about form, light, and the way a building is made, exactly what the Modern movement defined it as 50 years ago. The inclusion of historical allusion and color is laudable, but is ultimately, to paraphrase Peter Eisenman, Formalism in drag.

In contrast, there is emerging an architecture based on radically different premises. Often paralleling contemporary art, this work explores an architecture that addresses issues not traditionally associated with design ideology, and attempts to broaden the conceptual base of architecture by drawing on social, political, and environmental sources. Although not necessarily in line with mainstream developments, its practitioners, including ourselves, seek both to challenge and advance the profession. Many feel strongly that these attitudes constitute a tenable position in the future of architecture. It is regrettable that such representatives as Gordon Matta-Clark, Gaetano Pesce, Raimund Abraham, Gianni Pettena, Ant Farm, Walter Pichler, Alice Aycock, Gustav Piechl, and Franco Raggi were not included in your survey.

A publication, of course, has the right to its own point of view, and I assume these exclusions to be the result of a conscious decision, and not an oversight. Still, *Progressive Architecture* might consider addressing the points I have mentioned, not so much to endorse them, but more to give credibility to the journal's vision of itself as a chronicler of progressive trends.

I think we might all benefit from constructive dialogue.

Michael McDonough, Associate Member
SITE, Inc.
New York, NY.

News report

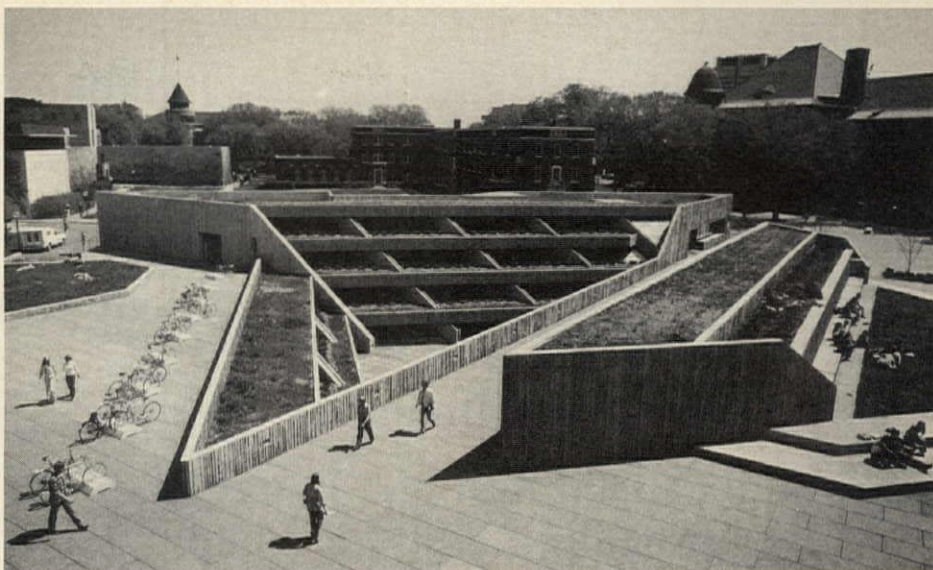
U. of Minnesota's underground store

The new bookstore at the University of Minnesota, Minneapolis, may be "underground," but it's far from being dark and gloomy. Slanted windows and a recessed courtyard allow in plenty of sunlight, which will be used to heat the building along with heat from electric lights and people. Even on coldest days, no other form of heating will be required. Temperatures underground vary only 10 degrees all year long since the earth prevents heat loss in the winter and heat gain in the summer. Architects for the building, which has won a *Progressive Architecture* Award (P/A, Jan. 1975, p. 52), are Myers & Bennett of Edina, MN. The Minnesota legislature also is funding a demonstration project of underground homes to be completed this year for state park rangers.

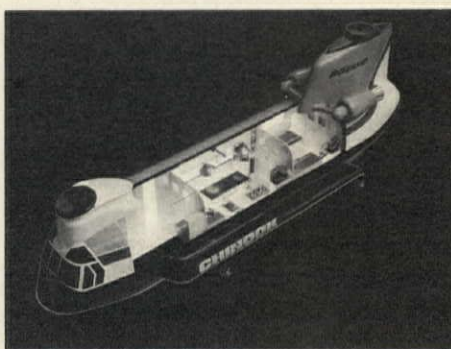
Airborne room for remote surgery

The prototype of a medical/surgical center within a helicopter, the first of its kind, has been presented by the Boeing Vertol Company in collaboration with Walter Dorwin Teague Associates, the industrial design firm. The design will enable emergency surgical facilities—a suite comprising an operating room and pre- and post-operative rooms—to be flown into remote or inaccessible areas without such facilities, after natural disasters or industrial accidents.

The 28,000-lb payload lift capacity



Students walk on top of the new \$4.2 million U. MN. bookstore.



Surgical room designed for helicopter.

of the Boeing Chinook helicopter, for which the surgical suite adaptation was designed by the New York design staff of WDTA under the direction of Frank Del Giudice, will also provide for the capability of transporting an inflatable, 100-bed hospital within standard 8'x8'x20' containers attached to the underside of the aircraft. Such a hospital facility would be assembled from already available, standard components, as are the entire contents of the medical center as specified by WDTA. Already used in extensive disaster relief work, the Chinook was originally developed as a military transport vehicle, and this operating room adaptation is one of four re-uses anticipated for the helicopter, which was widely used during the Vietnam War.

These additional adaptations include use as a learning laboratory with audiovisual equipment as a passenger/cargo transporter for surveying and construction feasibility studies; or as an executive V.I.P. aircraft. The interior design makes this the most advanced and mobile emergency surgical unit yet proposed and suggests the ways in which industrial designers are finding

ways of retooling military hardware for civilian purposes.

Boeing officials concede that the unusually high cost of such an aircraft (ranging from an estimated \$7 to \$13 million each, according to the quantity produced) will limit its widespread use. But nevertheless they feel that the extraordinary possibilities of the flying operating room/hospital will ensure its adoption in "cost-effective" situations where highly skilled or highly paid personnel are involved. And with the increase of construction and engineering projects in remote areas—such as the Middle East, Alaska, and the North Sea—this new development could well become an important breakthrough in emergency medical treatment in the construction industries.

ERDA solar grants for 80 buildings

The U.S. Energy Research and Development Administration has announced the selection of 80 buildings in 33 states to receive grants supporting solar energy demonstration projects; of these, 53 were new construction and the remainder retrofit. The grants totaled \$12.6 million; the smallest was \$450 for a fire station in Long Beach, CA., and the largest \$540,558 was for the Xerox corporate head-quarters under construction in Stamford, CT. All the grants are cost-sharing; the average share for EDRA is 68 percent.

The range of projects was wide including public buildings, schools, athletic facilities, senior citizen housing, and even a bus stop in Vail, CO. The

News report

grants were awarded on the basis of solar system type, geographic location, type of building, and type of solar equipment manufacturer, which had to be on EDRA's "approved" list. The projects included heating, cooling, and hot water systems.



Trispan dome afloat.

World's largest derrick enclosure

Dome East Corporation of Hicksville, N.Y., designers and manufacturers of spaceframe enclosure systems for shopping malls, schools, restaurants, recreation, or open office complexes, has completed installation of the world's largest derrick enclosure. Tri-span, a 52' x 70' combination vertical cylinder and geodesic dome, is now in use on the *R/V Deepsea Miner II* ship which mines metals from the sea off the West Coast. The frame was assembled in a record four days under the supervision of Erika Franke and 12 union shipyard workers. The frame is aluminum with a vinyl-on-polyester membrane suspended in light tension from the frame. It is engineered to withstand 100 knot winds with a 2x safety factor.

Capitol west front threatened again

The West Front of the U.S. Capitol, the only remaining original façade, is in danger again. Acting in what *The Washington Post* described as "the best tradition of aesthetic mongrelism," Congressional leadership has approved plans to extend the West Front rather than restore it.

The fiscal 1978 Legislative Appropriations bill, now before committees of the House and the Senate, would appropriate \$55 million for the project. In



past years when this plan has surfaced, the Senate, led by Sen. Ernest F. Hollings (D-S.C.), has turned thumbs down. This year Hollings is no longer chairman of the Senate Legislative Appropriations Committee, which has the approval power, and the outcome is uncertain.

In recent testimony before the Congress, George M. White, Architect of the Capitol and the leading proponent of the extension, said his plan would "preserve the wall, but rather as an interior wall instead of an exterior wall."

Restoration of the wall, which is severely deteriorated, was deemed feasible in a congressionally sponsored study several years ago. It would cost \$25-30 million and involve placing grout behind the weakened sandstone building façade.

President Carter asks for ideas

Calls for a cabinet-level department to coordinate urban programs and a federalized welfare system were two frequently mentioned reforms suggested by spokesmen at one of the first of President Carter's Citizen Forums on Urban Growth. The Forums were held May and June in ten cities across the nation, and anyone who wished to give testimony could do so, and they did by the dozens. Comments will be relayed to the President as input for his 1978 Report on Urban Growth, a paper required by law to be submitted to Congress every two years.

In the future, center cities may well be smaller—and consequently more

Courtesy: Herblock, The Washington Post.

liveable—was one conclusion voiced by several participants. Legislators and officials were challenged to rise above politics to make such "tough" decisions that would involve choosing between city and suburb, racial mix vs. all white neighborhoods, mixed income communities vs. rich enclaves, urban vs rural, older city or developing city.

Though turnout at certain Forums was substantial, overall attendance was poor and public interest at a low level. Few, if any architectural groups were invited to send a speaker; and no one spoke on behalf of architects at either the Boston or New York meetings.

The pre-election appearance of Mayor Michael Bilandic at the Chicago conference triggered good press coverage, and a southwest side community group took the opportunity to protest what it called the misuse of HUD's Community Development (CD) funds—a frequent complaint at a number of the regional meetings. Significantly, the Chicago Forum was held in the predominately black south side of the city, but the convenience didn't draw more than a moderate turnout.

Douglas Schroeder, speaking for the Illinois Council of the AIA, criticized the lack of direction and priorities in the expenditure of CD funds and suggested that emphasis be placed on projects generating long-term job growth and decent housing.

New York Mayor Abraham Beame, referring to the issue of welfare, noted with irony that "the cost of meeting these properly *national* burdens makes us more reliant on federal support to finance *municipal* construction and service delivery."

Many people urged policies, such as locating federal agencies in central cities, which would counter such trends as city-center decay and the exodus of corporations to the south and southwest. Others spoke of working in harmony with trends, like Stephen Berger of New York who recommended a policy of "orderly contraction" for older cities. Berger is executive director of the New York State Emergency Financial Control Board. "A city the size of New York can scale down its government and its problems to those of a much more manageable size," said Berger.

Seeming inequities were mentioned: Berger spoke of federal mass transit funding formulas based on population,

not ridership, thereby penalizing New York and other cities with extensive transit systems. One set of figures showed New York's receiving a subsidy of 2¢ per passenger whereas Grand Rapids, for example, receives 45¢ per passenger.

A speaker in Dallas, however, cited figures which showed New York's receiving \$11 per capita in Urban Mass Transportation Administration (UMTA) funds to Texas's \$1.04. The point was made that with the approaching energy crunch, automobile-dependent suburban communities like those in Texas will be hard hit.

Generally, the theme at the Dallas conference was widespread discontent with the recent federal shift to aid northeast cities. "It's at least equally important to meet the needs caused by increasing population as it is to counteract the impact of population loss," declared Dewayne Huckabay, an aide in the Mayor of Houston's office. The government must decide whether it's going to put the emphasis on where people are—or facilities.

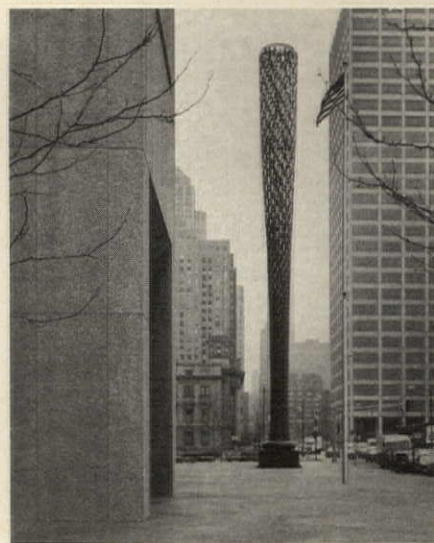
Subsidy seemed a popular solution for many problems and specific, original recommendations were few. Also discouraging was the conflict of interests between city dwellers and suburbanites, metropolitan and rural area.

Participants at the Kansas City conference spoke out against federal aid and urged instead greater volunteer activity in neighborhoods. "Unless people participate in our government, we'll have no livability," said the Rev. Geno Baroni, a priest and an assistant secretary with HUD.

Oldenburg bats a Chicago homerun

When Picasso's sculpture in front of the Chicago Civic Center—now Daley Center—was unveiled some years ago, it was met by a mixture of outrage, bewilderment, and the suggestion that it be replaced by a statue of baseball hero Ernie Banks. Chicago still has no statue of Banks, but with the recent dedication of Claes Oldenburg's "Batcolumn," the city has a 100-ft-high baseball bat monument on west Madison Street in front of the new Social Security Administration building.

With this work of steel painted dark gray, Chicago's already considerable



Oldenburg's 'Batcolumn' in Chicago.

collection of major works of outdoor sculpture by world-renown artists continues to grow. Oldenburg, a native of Sweden, grew up in Chicago and studied at the Art Institute of Chicago. The sculpture was commissioned and paid for by the General Services Administration through its program of funding public art by allocating a portion of building construction costs.

"Batcolumn" is many things: baseball bat, abstract obelisque, miniature skyscraper and, like Oldenburg's "fag-ends," and "lipstick on caterpillar treads," it is a phallic symbol. Most interestingly, "Batcolumn's" unsheathed form—a tube of latticelike horizontals and verticals trussed diagonally—relates visually to Chicago structural architecture looking like the John Hancock building turned upside down. The sculpture ought to be viewed as a silhouette against the sky, and unfortunately the space in front of the Social Security Administration building is just too small to adequately display it.

Package tours for Designer's Saturday

Package tours are available for Designer's Saturday 1977, a two-day furniture showroom exposition, to be held in New York Oct. 7 and 8. Entering its tenth year, Designer's Saturday is drawing a wider audience annually, and so the tours are being made available for the convenience of visitors from the West Coast, Southwest, and Midwest. Write Package, Designer's Saturday Inc., P.O. Box 1103, FDR Station, New York, N.Y. 1022.



Robert Behrens' "Earth Crystal."

'Earth Crystal' reflects Denver sights

Working in a little-used medium for sculpture—glass—Colorado artist Robert Behrens has created "Earth Crystal" for the plaza of the Denver Convention Center. The work consists of two elements, the highest 15 ft, and was commissioned by the Park People Inc. program of Denver funded through the National Endowment for the Arts. By day or night the 12 mirrored facets reflect the changing environment. The sculpture is self-supporting with no interior framework. Behrens studied architecture at Pratt Institute and later received degrees in fine arts; he works from a studio in Conifer, CO. Construction/design collaborator was Frank Seiburth.

Planning team formed for Atlantic City

The Office of Angelos C. Demetriou of Washington, D.C. will head a consortium to develop the masterplan of Atlantic City, N.J. in anticipation of the changes which the city's Casino Gambling referendum of 1976 will bring. Other members are Gladstone Associates of Washington, D.C., economics; Barton-Aschman Associates of Washington, D.C., transportation/parking; Ross, Hardies, O'Keefe, Babcock & Parsons of Chicago, zoning and land use policies; The Schnadelbach/Braun Partnership of Philadelphia, environment/ecology; Reg Griffith Associates of Washington, D.C., social planning; and The Ralph M. Parsons Company, of Washington, D.C., engineering. More than 40 national and international groups expressed interest

in producing the masterplan, and 10 were invited to make final presentations. The Demetriou firm has prepared plans for downtown Peoria, IL., Racine, WI., and the West End Project for Central Washington, D.C.

Minnesota opens Architectural Center

The Minnesota Society American Institute of Architects had a grand opening April 1 for its Architectural Center in downtown St. Paul. The mezzanine level space was renovated by architect Howard Goltz of Minneapolis. The manager of Architectural Center is Susan Davis, a former New Yorker whose background is in fine arts and retail sales of books.



Architectural Center, St. Paul.

The public may visit the center Mondays through Saturdays and see displays on the services offered by architects. Free literature as well as books for sale are available; architectural tour information is provided; and a gallery of architectural photography featured. The location of the center is the Northwestern Skyway Building.

The Minnesota Society also opened new headquarters in the recently renovated E.L. Carpenter mansion near the Walker Art Center. The home was by William Channing Whitney and also is the State Arts Council.

Pop goes the Milwaukee tune

Architects' borrowings from and lendings to popular architecture was the theme of a three-day spring conference organized by Charles Moore and Wayne Attoe at the University of Wisconsin, Milwaukee. Juan Bonta, one of the invited speakers, demolished what he called the myths distinguishing architect's architecture from popular architecture. These include the com-

monly held oppositions of rational versus intuitive process, individual versus collective design, and new and unique versus conventional and repetitive form.

Joseph Rykwert quoted T.S. Eliot's quip that "the good poet steals and the bad poet borrows" leaving everyone to decide from among the talks who was borrowing and who was stealing.

Fay Jones, who Moore introduced as "doing Wright the right way" or was it "right the Wright way"? showed his lovingly "stolen" houses. George Baird refused to throw his handful of dirt on the grave of the "modern movement" and showed a series of handsome house additions in which modern architecture, pipe rails, and all, seemed to sensitively co-exist with the rest of the world, an idea that may some day reach the East Coast.

The conference was marked not so much by clear directions or conclusions as by "presences." Frank Lloyd Wright seemed a presence as did the conspicuous absence of any invited participants from New Haven, New York, or Philadelphia. Perhaps the strongest presence at the conference was the vernacular-pop legacy of MLTW (Moore, Lyndon, Turnbull & Whitaker) with "M," "L," and "W" all in attendance and their work appearing as examples in at least five of the slide presentations. Speakers included Attoe, Stuart Cohen, David Gebhard, Ricardo Legorretta, Donlyn Lyndon, Stephen Robringer, and Sally Woodbridge.

UL opens library for public use

The Standards Reference Center of Underwriters Laboratories, Northbrook, IL., is now open to the public, and a reading area has been set aside for this purpose. Previously the library has served only the UL staff. Its reference materials include all published UL standards for safety as well as standards by numerous other organizations, such as the American National Standards Institute, National Fire Protection Association, and the American Boat and Yacht Council. UL Standards of Canada are included as well as textbooks and handbooks of engineering disciplines, and the Federal Register. [News report continued on page 28]

INTRODUCING GUARDIAN REFLECTIVE GLASS ETV22 BELTCLINE

**Now your building
can keep more of its cool.**

Guardian Industries' new TE-10 reflective glass reduces solar heat gain by as much as 85%. Yet, it allows visible light transmission of 10%. And thermal transmission in wintertime is reduced by 55%. So energy costs stay lower all year 'round.

With other Guardian reflective glasses you can reduce solar heat gain up to 92%, allow up to 30% visible light transmission, and reduce thermal losses by as much as 70%. So whatever your design needs may be, Guardian has the reflective glass to do the job.

Guardian S and T series reflective glass is now available for monolithic applications, as well as for double glaze units with Guardian "airspace" insulating glass. A variety of shades and colors are available to give you superior performance in both new and reglazing applications.

Specify new Guardian Industries' reflective glass. When you build buildings that keep more of their cool, you keep building your list of customers.



See sweet's section 8.26/GU

Circle No. 344 on Reader Service Card

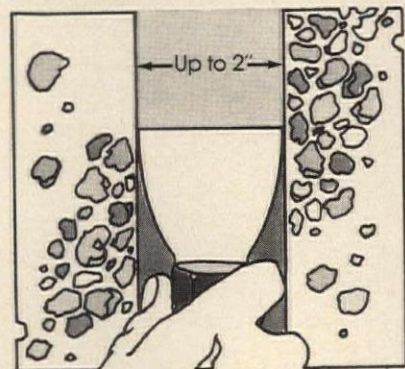


Tremco can help you solve special problems involved in designing with precast.

While precast concrete offers many design advantages, it also presents some special joint sealing problems caused by dynamic movement, weather and the threat of fire. To help solve them, Tremco offers broad technical services plus a range of job-proven products and systems. Here's a brief look at our solutions to three basic problems.

Handling stress and movement.

Tremco has developed a sealant to stand up to the unusual amount of movement in precast joints—



DYmeric®, a two-part high-performance sealant. In a single application DYmeric can seal joints up to 2" wide, normally without priming.

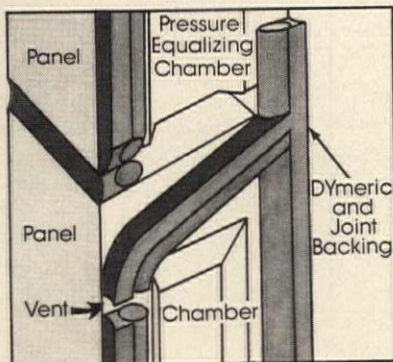
To be sure of good adhesion, the joint interface should be thoroughly clean before it's caulked.

Form release agents and dampproofing coatings can interfere with sealant performance, so your best bet is to draw on Tremco's experience while you're still in the design stage.

Taking weather in stride.

Openings can occur in even the most carefully constructed panels and joints, which will open the door to weather problems.

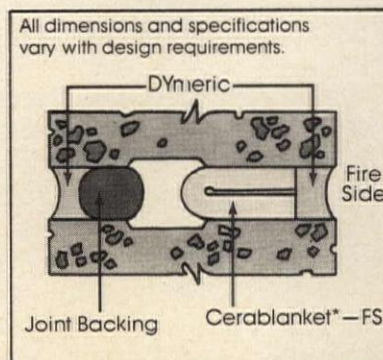
The Tremco solution: the modified two-stage rain-screen sealing system. Unlike one-stage systems, it



gives you two lines of defense against weather. It consists of a vented seal on exterior joints; an airtight seal on interior joints; with an air-pressure equalization chamber between the two. Equalized pressure in the wall cavity helps keep out wind-driven exterior moisture and prevents moist inside air from being pulled into the wall. Any moisture that finds its way in drains harmlessly away through the exterior vents.

Resisting fire.

Although precast panels themselves are fire-resistant, the openings between them can be a hazard if a fire



breaks out. The best protection: Tremco's exclusive fire-resistive joint sealing system that can achieve required fire endurances of two to four hours at the joint.

This system uses Tremco's DYmeric sealant and Cerablanket*-FS, a

pure ceramic fiber blanket made from alumina-silica fibers and manufactured exclusively for Tremco by Johns-Manville. Under test conditions, this system prevented passage of flame or hot gases and stopped transmission of heat beyond the temperature limits in ASTM E-119.

Solving other problems.

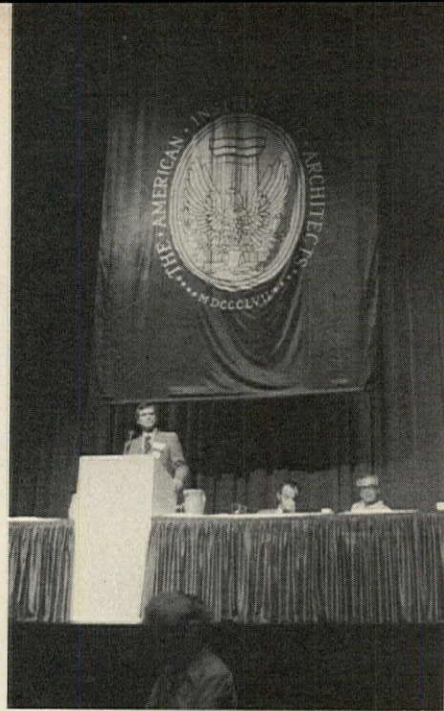
Remember, Tremco offers a host of job proven water-proofing, caulking, glazing and roof edge systems. We'll work with you through design and specification stages to make sure you'll get the best system for your needs. Just contact your Tremco man. Or Tremco, 10701 Shaker Blvd., Cleveland, Ohio 44104. Tremco (Canada) Ltd., Toronto, Ontario, M4H 1G7.

*Trademark of Johns-Manville

Drawings not to scale.

TREMCO®

AIA Convention



Photos: John Dixon

AIA President John McGinty.

Vote No on Design/Build

After a year of study, proposed changes in AIA membership categories, ethics, and dues were presented to the 1977 AIA Convention in San Diego. Hoping that "Tomorrow" would open the door to increased design/build activity, the AIA officers and the Ethics Task Force had submitted a revised code of ethics. Clearly the hottest issue was whether an architect may engage in building contracting. As proposed in the revised code, the only basic restrictions would have been that the architect's financial interests should not be allowed to influence his professional judgment on behalf of the client, and that any potential conflict of interest must be disclosed to the client in writing.

Another provision in the revised code allows for the use of representatives to obtain work (common in foreign operations). As written, the new proposal maintained the existing bans on advertising and free sketches.

AIA President John McGinty said that letting architects engage in contracting "is not a debasement of architecture, it is an ennobling of contracting." President-Elect Elmer Botsai agreed, noting that he had not originally favored such a change.

However, an amendment (Alternate "A") specifically banning building contracting by architects was introduced along with the proposed code. It stated, in part: "Members may not engage in building contracting where compensation . . . is derived from profit on labor and materials . . . except as participating owners. . . ." Jerome

Cooper of Atlanta, in his minority report from The Coordinating Committee, spoke for the amendment. If the code were adopted without alternate "A", he felt that "only the most exceptional among us would have the discipline to withstand that temptation (to put architect's interest above client's) when confronted with the specter of financial loss."

Botsai called the amendment "nothing but sheer hypocrisy," asking the convention not to dictate to young architects *how* to be ethical. George Notter of Boston also opposed the amendment, saying that an ethics document should be a performance spec, not a prescription. But it carried, 995 to 865. The revised code passed as amended. No building contracting, advertising, or free sketches; but within limits, paid representatives may be used to seek work.

In other business, "corporate members" will be called "members," and associate membership (unlicensed professionals) will be limited to those directly involved in architectural practice.

On the subject of dues, associate members will pay \$15 per year for the first 5 years, then \$30 per year. Members will pay \$50 the first year, \$75 the second year, and \$100 per year thereafter. Supplemental dues paid by the firm will be \$155 per year for each registered architect on the staff, less an \$85 credit for each AIA member.

Both the member classification and the dues changes sparked debate. Some saw the changes as necessary to upgrade the association membership and revenue. But many vocal op-

ponents felt that both sets of changes would only further alienate the young architectural graduate or architect. It was argued that this alienation would reduce AIA income by enough to offset assumed gains from dues.

Even a proposal to elect officers on a national mail ballot was voted down. The collective effect of these actions seems to legislate against the young and the small practitioner, those categories that can least afford higher dues or trips to San Diego.

Mitchell First Vice President

In elections held at the San Diego convention, Ehrman B. (Bud) Mitchell of Philadelphia was voted into the office of First Vice President and President-elect. Mitchell will succeed Elmer Botsai of Honolulu, who will take over as President in December 1977.

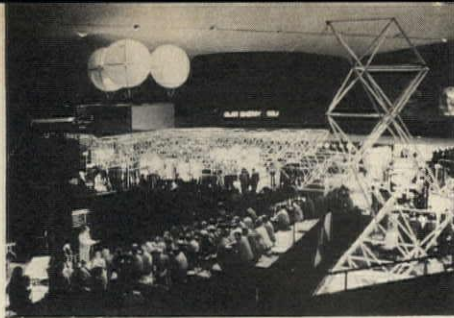
Also elected were three Vice Presidents: Herbert Epstein of Brooklyn Heights, NY; Sarah P. Harkness of Cambridge, MA; and Charles E. Schwing of Baton Rouge, LA. Joseph F. Thomas of Pasadena, CA and Robert M. Lawrence of Oklahoma City, OK were elected to 2-year terms as Treasurer and Secretary respectively.

William L. Slayton surprised the convention by announcing his resignation as Executive Vice President effective January 1. He has assured President-elect Botsai that he will be available for consultation for one year.

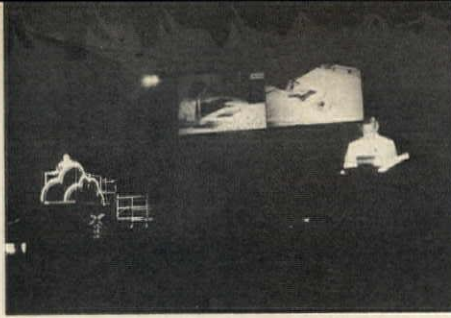
'Tomorrow' past in San Diego

With a crash of cymbals and a crescendo of violins the AIA strode fearlessly into the communications world of the 1960s. To the background of massive orchestration, slides of clouds, sunsets, and space ventures flashed on screens around the darkened Golden Hall, reminding many viewers of the Eameses' IBM Pavilion at the 1964 New York World's Fair (and several fairs since). The four theme presentations following this nostalgic introduction to the AIA Convention—entitled "Tomorrow"—varied widely in content and validity. Speakers were hoisted high among the multiple screens on a "cloud-enshrouded" cherry-picker crane.

Raymond Kappe, Architect and Director of The Southern California Institute of Architecture in Santa Monica,



Golden Hall, scene of the theme program at the 1977 AIA Convention in San Diego. Mini-theaters held concurrent discussions of products and processes, with pods housing manufacturers' displays located on the floor beyond the space frame theater canopies. Multiple screens appear under the balloons (left) and in background (far right).



During each theme speaker's talk, keynoter was raised far above the audience on a decorated crane (far left), while televised image was projected in color, often appearing alongside speaker's visual material. Here, Donald Greenberg of Cornell describes the use of computers in various phases of architectural design.

gave the opening presentation, "Response To Crisis," which got mixed reviews. While his speech was eloquent and his images spectacular, most of what Kappe offered seemed meant to appeal broadly to ecologists, technologists, and formalists alike. Beginning with future visions later expanded by the final speaker, he then reviewed those past movements advocating megastructures and, concurrently, social concern.

But the energy crisis marked a major "system break," he noted. Kappe sees "The next 10 to 15 years as a period to recycle, reclaim, and rehabilitate rather than one that compounds the growth philosophy of the 1960s and early 1970s."

Theme speaker for the second day, Dr. Donald Greenberg of Cornell University, did offer some pragmatic realistic solutions—"Tools for change." Drawing on his pioneering work in computer graphics and cathode ray tube (color) simulations of building designs, Dr. Greenberg showed how it is possible to travel around, over, and through proposed facilities on the TV screen.

On the third and final day, NASA Astronaut Russell Schweickart and futurist F.M. Esfandiary ascended before the crowd to give their views of the future. Schweickart spoke with convincing modesty of his experiences in space. He also showed renderings of future outer space structures envisioned by NASA designers, and called on the architectural profession to help design "humane and vital" environments for all living organisms.

Esfandiary, predictably, said the most optimistic, sweeping, and outlandish things. Calling this "The Breakthrough Generation," he called on society to abandon its "old-world psychology of failure." Changes in every facet of life should bring us to attitudes

of hope, he said. "All this primal screaming about scarcity is a galactic farce," Esfandiary expounded. "There is no scarcity. There is a *psychology* of scarcity."

Along with the recognized sources of energy potential—solar, laser fusion, geothermal, wind, and hydrogen—he coupled the capability to extract limitless raw materials from recycled wastes, rock, earth interiors, ocean floors, and space. "We are at the beginning of an energy *glut*," he insisted.

Progress, in Esfandiary's view, is measured by societies' move "from veils to bikinis . . . from village life to global telecommunication." Beauty is exemplified by Club Méditerranée-like clubs and communities.

On cities: "We speak of preserving historical landmarks. The fact is that the cities themselves are now historical landmarks. We should leave them as they are and get out." The remark was illustrated by a slide of a slum alley littered with discarded dolls. "Our cities are too old to live in," Esfandiary said, "too historically valuable to tear down. Cities have a great future—as museums."

In general, the only thing between us and realization of anything is our attitude, it seems. The convention's exhibits and theme *did* break the mold a bit. There was a conventional exhibit area, occupied by a few manufacturers and architectural school displays. But the unconventional area, created by designer Joe Nicholson, was intermixed with mini-theaters under space frames, and seemed more populated.

Women on the move towards 'Tomorrow'

The AIA Women's Caucus had a busy agenda which included adoption of a number of resolutions prodding the AIA to intensify its implementation of the year-old "Affirmative Action Plan"

to integrate women in the profession. The women want 100 percent equal pay by 1979—not 90 percent, as the AIA plan puts the target. Greater component activity is seen as necessary, and to this end the women want specific guidelines. The women also want the AIA convention coordinator to include a representative of the Women's Caucus on each year's Host Chapter Steering Committee.

Looking ahead to the International Women's Year conference in November in Houston, TX., the caucus wants the AIA's delegate to that meeting to coordinate with various organizations of women architects to develop a position.

Present at the Women's Caucus were representatives of such groups as Washington Women in Architecture, which includes in its activities distribution of a 20-minute videotape produced by NBC-TV called "A Woman Is . . . An Architect"; Alliance of Women in Architecture, a New York City group promoting employment, education, and communication for women architects; Sisters for a Human Environment (S.H.E.) in Seattle; and the Association of Women in Architecture, Los Angeles.

Dolores Hayden, assistant professor of architecture and history at Massachusetts Institute of Technology, gave the major address, "Sex Roles and Housing in America Tomorrow." She spoke of the needed drastic revision of housing in light of greater employment of women outside the home and increased single adult households. Ms. Hayden recommended either reducing or eliminating the kitchen as a major room in the house or else making it a dominant room in which all members of the family participate. She cited experiments, such as the Amana Community in Iowa, of the 19th and early 20th century as making more serious attempts than today to solve architectural requirements for changing social and domestic patterns. Ms. Hayden is author of *Seven American Utopias* (MIT Press, Cambridge, 1976).

Upcoming events for women architects include an International Exhibit of works by women architects and planners, October, in Paris: write L'Union International des Femmes Architectes, 14 rue Dumont d'Urville, Paris XVI, France; and the 5th UIFA International Congress to be held in Seattle, WA, in September, 1979.

Bright future for architects by 1980s

If certain statistics are observed, the future looks good, according to labor statistician Herbert Bienstock of New York. "Down the road something's about to happen," he told a gathering at the New York chapter of the American Institute of Architects. The key, according to Bienstock, is the recent

sharp decline in births which "means we're going to have far less pressure in the labor market in the decade ahead. By the mid-1980s a manpower shortage will be inevitable . . . college graduates will be few." He added that all statistics must be viewed with a certain amount of caution since they often tend to be misleading. Bienstock is a regional commissioner for the U.S. Department of Labor, Bureau of Labor Statistics.

Architects can expect 33,000 jobs to open between 1974 and 1985 (about 3300 annually) raising the total num-

ber of architectural positions to 60,000 by 1985. Contrary to occupational trends nationally in which most openings will occur as people—particularly child-bearing women—leave the labor force, most job openings in architecture will be the result of growth. The breakdown is 20,900 growth openings in architecture and 12,100 replacement openings in the next eight years. Not only will the labor market be less competitive in the decade ahead, but the economy also will be more productive as the Baby Boom generation enters the ages of 30 to 45 years, "the high consumption, high production period." Bienstock says the recent outburst of home building/buying should come as no surprise since the 1947 baby crop has just reached the age of 30 and is leaving the dependency stage and entering the family-raising period. The birth decline also will mean a safer environment in years ahead because juveniles—who account for much of the street crime—will be fewer, and there will be fewer elderly to be victimized.

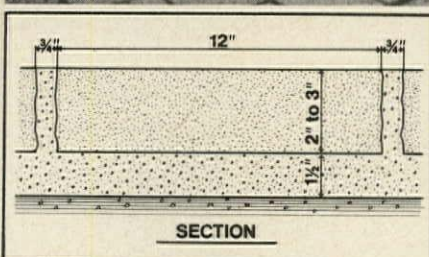
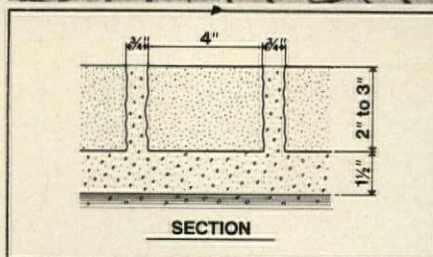
Since 1973 architecture has lost 10,000 jobs; female architects account for 3.2 percent of the profession: double the percentage of female engineers; unemployment rates for college graduates, at 2.8 percent, still is lower than for nongraduates. The demand for college graduates is three times greater than for all workers. By 1985 the United States will have over 12,000 graduates a year in architecture and environmental design vs. the 1974 number of 8000 a year. The distribution of architects in fields outside architecture is small, and the percentage of architects by 1980 in nonarchitectural occupations will decrease. Construction first and then government agencies account for the greatest number of architects employed outside the profession.

Judge rules on Bronx state facility

A decision on the placement of members of the Willowbrook class of mentally retarded into Bronx Developmental Center (p. 43) was handed down by federal Judge John R. Bartell as this issue went to press. He decided in favor of the Willowbrook Review [News report continued on page 34]

Granite.

Beautiful for heavy traffic areas.



Cold Spring granite is a natural for landscape applications. Its warm colors and natural textures blend beautifully with the environment. And at the same time, granite provides the designer with the flexibility he needs to create areas of unusual and lasting beauty.

At Cold Spring we now have a wide variety of Module Pavers and Durax Blocks available. For more information, plus a packet of full color literature illustrating our products in use, call toll free **800-328-7038**. In Minnesota, call (612) 685-3621. Or write to the address below.



Cold Spring Granite Company, Dept. PA-7 202 South 3rd Avenue, Cold Spring, MN 56320

NOW...a new spray-applied Portland cement base fire protective material for structural steel...

PERMALITE[®] DTS[®] (Direct-to-Steel)



● Permalite[®] DTS[®] Fire Protective Material is a mixture of Portland cement, expanded perlite aggregate and Permalite DTS[®] Master Batch. It is applied directly to structural steel framing to provide effective fire protection.

Permalite DTS Fire Protective Material is economical to buy and apply. It is cost competitive with other materials used for the same purpose.

Its application by most standard plaster pumps is simple and rapid. Most thicknesses can be applied in *one* working day from *one* scaffold set-up with *one* clean-up. Permalite DTS Fire Protective Material is resistant to weather damage and construction water and need not be covered before the building is enclosed. All these advantages save time, labor and scaffolding costs. Write now for free data sheet.

GREFCO gives you an alternate fire protective material that:

- ★ Sets and dries faster
- ★ Is UL fire rated up to four hours
- ★ Is impact and erosion resistant—even resists wind-driven rain—because it is made with durable Portland cement.
- ★ Is applied with conventional equipment.
- ★ Reduces scaffolding costs.
- ★ Speeds clean-up
- ★ Contains no asbestos

PERMALITE[®] DTS[®] **Fire Protective Material**

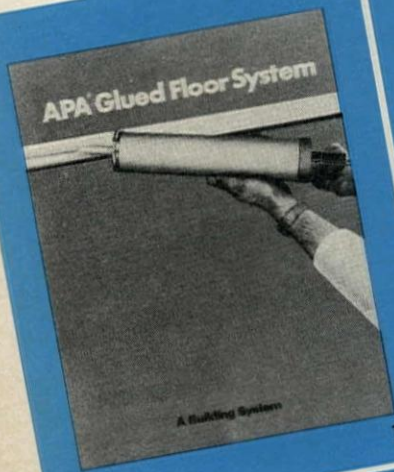
Manufactured by GREFCO, Inc.
Building Products Division

3450 Wilshire Blvd., Los Angeles,
CA 90010. (213) 381-5081



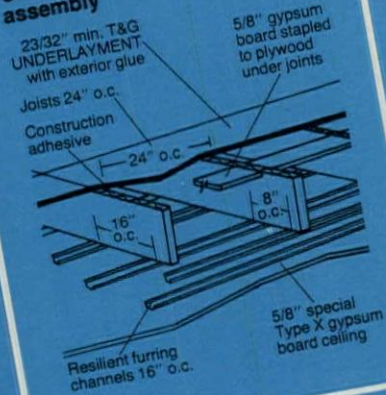
A subsidiary of General Refractories Company

Plywood's a great design the details



1

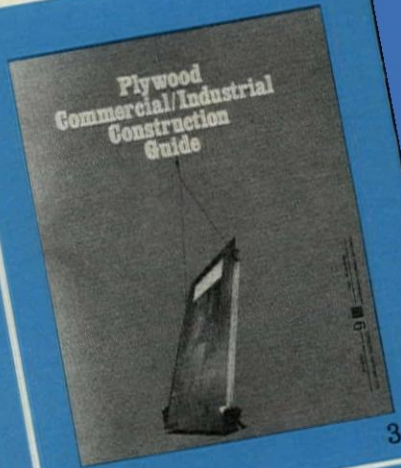
One-hour fire rated floor assembly



Plywood Construction for Noise Control

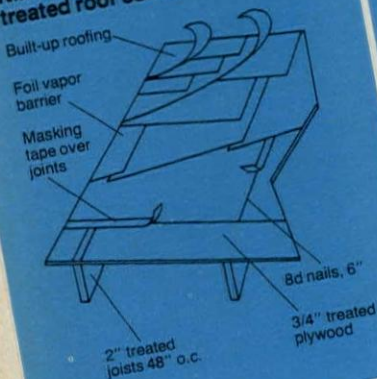


2



3

NM 501A Fire retardant treated roof construction

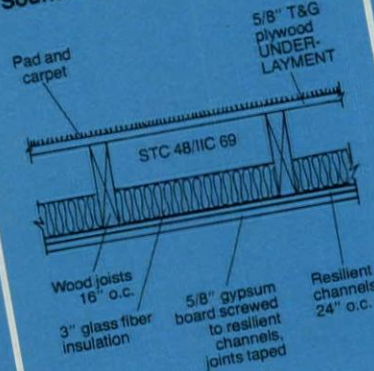


Plywood construction for fire protection.

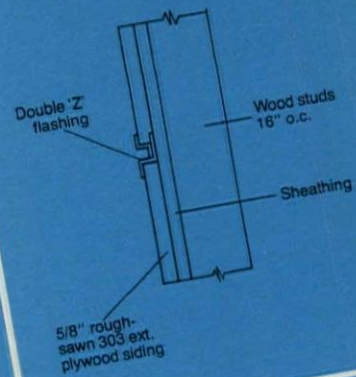


6

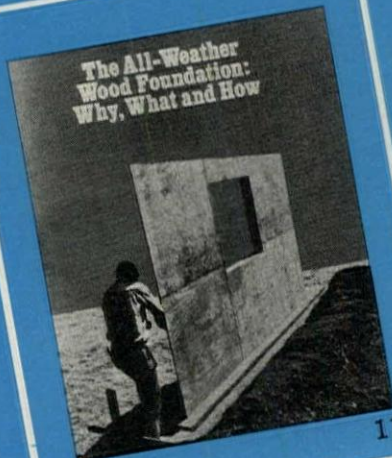
Sound control



Exterior wall joint detail

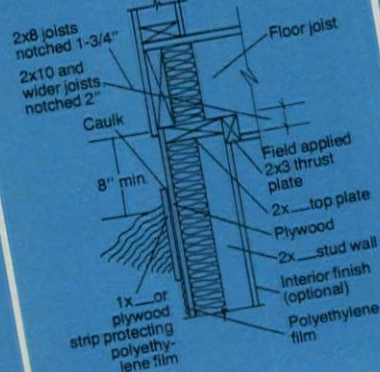


10



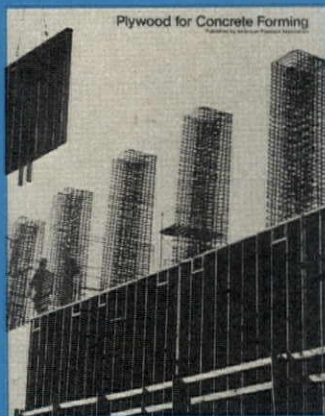
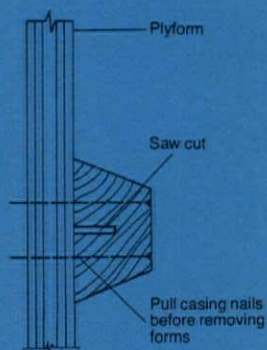
11

AWWF side walls to floor



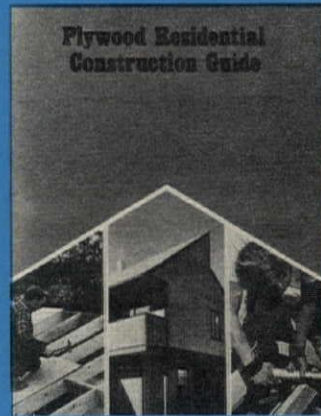
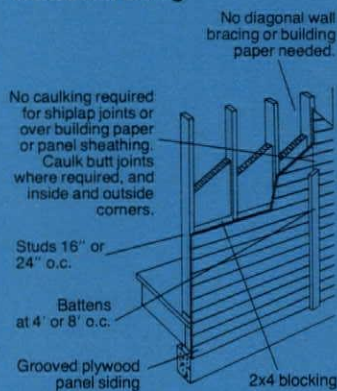
material, and we've got to prove it.

Attaching rustication strips to concrete form panels

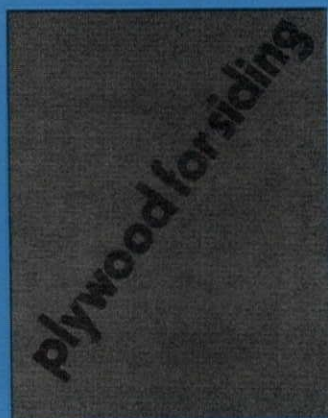


4

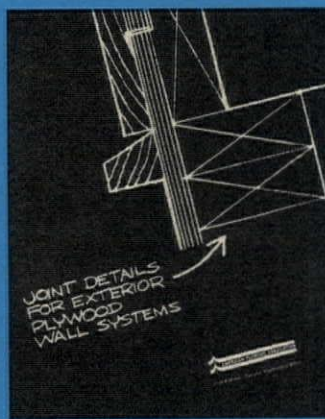
Horizontal siding



5

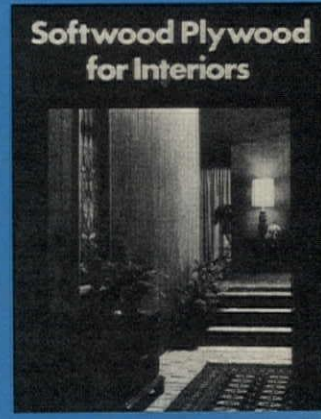
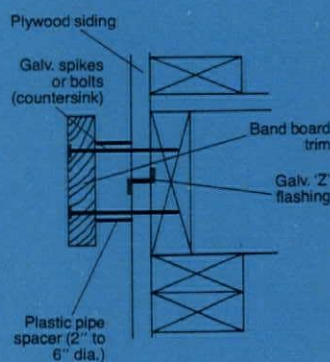


7



8

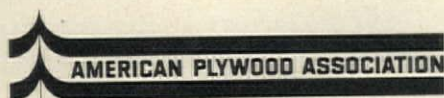
Band board in relief



9

Free plywood design ideas. Help yourself.

We'd like to tell you everything we can about designing with plywood and plywood systems. Circle the number for each book you want and send this coupon to: American Plywood Association, Department PA-077, 1119 A Street, Tacoma, WA 98401.



American Plywood Association, Dept. PA-077
1119 A Street, Tacoma, WA 98401

☐ Please send me the following books. 1 2 3 4
5 6 7 8 9 10 11 12

☐ I'd like to talk about plywood design with an APA field man.

Name _____

Firm _____

Address _____

City _____ State _____ Zip _____

Phone () _____

News report continued from page 30

Panel's recommendation that the class be placed gradually but directly into the community instead of being transferred first to the Bronx center. Judge Bartell felt the risks of delaying advancement of the retarded by placing them in another institution outweigh benefits of the improved environment. The State Department of Mental Hygiene still plans to open the facility this fall for other mentally retarded residents of the Bronx. [SS]

Open space planning discussed in Miami

How to preserve and acquire open space was the theme of a workshop, "Open Space: Private or Public Land," sponsored by Florida International University in Miami. One of the main obstacles to having open space is fear of losing property from the tax rolls through purchase by government or by leaving it undeveloped.

Recommendations to change this state of affairs included taxing actual use of land with no tax for empty land;

taxing land alone rather than improvements on the land; developing an unearned increment tax which would rise as land values increased.

Merle Frank, speaking for the League of Women Voters, proposed conveying land to public usage by outright government purchase and establishing a government land bank.

Joel Kuperberg, southeastern operations vice president for the Trust for Public Land, explained how the Trust works. It receives donated land and then sells the land to a government agency at a price usually below appraised value. Acting as a public interest intermediary, the Trust is successful because of its ability to act swiftly, to be flexible, and to provide a tax writeoff. [Edward Levinson]

Mr. Levinson is a registered architect who lives in Miami.

Built to Last: a handbook

A soft cover book published by the Preservation Press of the National Trust for Historic Preservation, Washington, D.C., illustrates with 33 case

studies that recycling old buildings not only preserves structures of special character but also saves money when compared to new construction. The book, *Built to Last: a Handbook on Recycling Old Buildings*, is a companion to one published by Preservation Press last year, *Economic Benefits of Preserving Old Buildings*.

The handbook was prepared by the Office of Local Assistance, Massachusetts Department of Community Affairs, under the direction of associate planner Gene Bunnell.

Personalities

Lisa Taylor, Director of the Cooper-Hewitt Museum, New York City, has received an honorary Doctor of Fine Arts degree from Parsons School of Design, New York City.

Patrick M. Sullivan of San Luis Obispo, CA., has received the Rotch Travelling Scholarship from the Boston Society of Architects. Marvin J. Malecha of Pomona, CA., was named alternate. The scholarship provides a stipend for foreign travel.

[News report continued on page 36]

Today's exorbitant energy costs demand a whole new approach to a building's exterior design!

The KALWALL[®] SYSTEM is that NEW APPROACH!

The demand is for buildings that use sunlight as much as possible. At the same time, they must be highly insulated!

The Kalwall System is BOTH light transmitting and INSULATED. This means the entire structure can have walls of Kalwall to let natural sunlight in all around. Yet, because Kalwall is so highly insulated, there isn't the terrible heat loss of transparent window-wall type buildings.

See for yourself! Visit a Kalwall building. Talk with the owner, with the operating personnel. It'll be an exciting experience.

Circle No. 326, on Reader Service Card

Kalwall CORPORATION

1111 Candia Road, Manchester, New Hampshire 03103 Phone 603-627-3861

Full color literature gives complete details and specifications. Call or write Bruce Keller. By return mail, you'll get all the literature plus the name of an installation nearby!

Kalwall Systems Save Energy!

Jackie Robinson School
New Haven, Conn.
Stull Assoc. — Architects



Some specifications of the Kalwall System:

- | | |
|----------------------------|--------------------------|
| • Light transmission range | 3% to 83% |
| • U-Factors | .40, .24, .15, and .06 |
| • Shading Coefficients | .85 to less than .06 |
| • Weight per Square Foot | 1 1/2 pounds |
| • Thickness of System | 2 3/4 inches |
| • Design Considerations | Unlimited |
| • Cost | Try Kalwall on for size! |

Bally where all our energies
are aimed at reducing
your energy costs.



**Bally
walk-in doors
are especially
designed to keep
cold air in...and
reduce energy waste.
They're guaranteed
not to sag...drag...
twist or warp...ever.**

**It's one more reason
why you should buy Bally.**

Bally doors open easily by hand or foot touch . . . then powerful spring-loaded hinges close them automatically and quickly. The final touch is a magnetic gasket on each door that guarantees an absolutely air tight seal.

The superior fit and efficiency of Bally doors results from two things . . . the unique door design . . . and the welded steel double U-channel frame in which it is hung.

Bally is the world's leading producer of walk-in coolers/freezers that can be assembled in any size for indoor or outdoor use . . . easy to enlarge or relocate . . . refrigeration systems from 50°F. cooling to minus 30°F. freezing. Subject to fast depreciation and investment tax credit.

(Ask your accountant.) Write for free 28-page book and urethane wall sample. **Bally Case & Cooler, Inc., Bally, Pa. 19503. Phone (215) 845-2311.**



ADDRESS ALL CORRESPONDENCE TO DEPT PA-7/77

Circle No. 310, on Reader Service Card

Calendar

Through Aug. 31. "Forms in Focus," largest outdoor sculpture exhibit ever assembled in New York City, at Co-op City, The Bronx.

Through Sept. 11. "Palladio," Cooper-Hewitt Museum, New York City.

Through Sept. 18. Exhibit of architectural sketches and drawings from the American Institute of Architects' Architectural Archives, many never before displayed in public, at The Octagon, Washington, D.C.

July 13-Sept. 13. Group show of architectural drawings, Spaced Gallery of Architecture, New York City.

July 15. Deadline for entries in the Red Cedar Shingle & Handsplit Shake Bureau/AIA Architectural Awards Program, Bellevue, WA.

July 22-25. American Society of Interior Designers national conference, Houston, TX.

Aug. 1-5. Course on designing for winds, tornadoes, and hurricanes, Institute for Disaster Research, Texas Tech University, Lubbock.

Aug. 19-21. SOLARCON-77, first annual national solar energy convention and exhibition, Civic Center/Brooks Hall, San Francisco.

Aug. 22-23. Conference on the solar energy business, sponsored by The Energy Bureau, Hyatt Regency Hotel, Washington, D.C.

Aug. 31. Deadline for entries in the P/A Awards program.

Sept. 5-10. International Federation for Housing, Urbanism, and Territorial Planning congress, Geneva, Switzerland.

Sept. 14-18. First International conference on the history of urban and regional planning, Bedford College, London, England.

Sept. 19-24. ICSID 10, International Council of Societies of Industrial Design Congress, Dublin, Ireland. Send registration by July 16 (fee slightly higher after that date) to ICSID 10 Congress Secretariat, 44 Northumberland Rd., Dublin 4, Ireland.

Sept. 21-23. Symposium on roofing technology, sponsored by the National Roofing Contractors Association and U.S. National Bureau of Standards, National Bureau of Standards Facility, Gaithersburg, MD.

Oct. 7-8. Designer's Saturday, New York City.

Oct. 10-13. Producers' Council national conference, Williamsburg Inn, Williamsburg, VA.

Oct. 13-16. Annual meeting of the National Trust for Historic Preservation, Mobile, AL.

Oct. 24-26. Symposium on problems associated with design and construction in developing countries, Munich, Federal Republic of Germany.

Oct. 24-28. First international conference on energy use management, Tucson, AZ. Organizers are University of Arizona and Interdisciplinary Group for Ecology, Development and Energy.

Nov. 1-3. Second annual Building & Construction Exposition & Conference, McCormick Place, Chicago.

Nov. 3-6. Energy Fair '77, Anaheim Convention Center, Anaheim, CA. Show will feature alternative energies and energy conservation techniques and products.

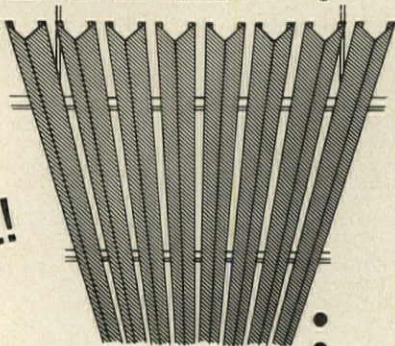
Nov. 8-10. Conference on energy efficiency in wood building construction, McCormick Inn, Chicago. Conference is sponsored by Forest Products Research Society.

[News report continued on page 40]

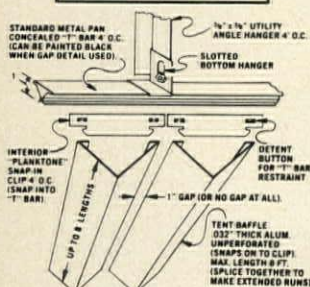
"TENT-TYPE"

Aluminum Baffles

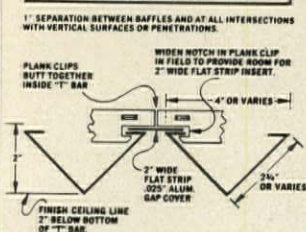
**LONG!
SLENDER!
DRAMATIC!
DIRECTIONAL!**
ACOUSTICAL IF DESIRED



EXPLODED VIEW OF PARTS



SECTION THROUGH TENT BAFFLE WITH GAP COVER



Available direct from Mnfr.

Available in "Specular" Gold or Silver for mirror-like effect
Also available in Baked White Enamel, Anodized, Color Enamel

SIMPLEX CEILING CORP. Refer to SWEET'S CATALOG Section 9.1

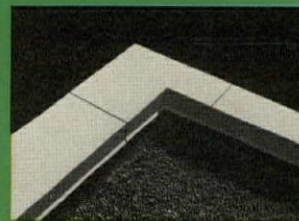
SALES OFFICE: 663 FIFTH AVE., NEW YORK, N.Y. 10022 • PHONE (212) 349-1890
DIRECT PHONE TO FACTORY: (201) 864-6630

• Sales "Reps" needed—Write to Simplex for information •

**GOT
THIS?**



**GET
THIS!**



Hickman Permasnap Coping System

is the perfect replacement for broken tiles on old building parapets. It's **guaranteed** against water leakage. Styrene gutter chair at each joint channels away water to roof. Special adhesive anchors system without expensive wood nailers or imbedded bolts, holds against 60-lb./sq. ft. uplift. Permasnap Coping System is easy to install for a neat, trim look.

Reroofing? Include **Hickman Reglets** . . . the perfect way to flash a roof to a wall.

Hickman's **FREE "Roof-Line"** . . . 1-800-438-3897

Available in Canada

HICKMAN
ALUMINUM CONSTRUCTION PRODUCTS

W. P. Hickman Company □ 175 Sweeten Creek Road
P.O. Box 10505 □ Asheville, N.C. 28803 □ (704) 274-4000

Airborne Design, Inc.
 Atelier International, Ltd.
 B & B America
 Brickel Associates, Inc.
 Castelli Furniture, Inc.
 CI Designs
 Dunbar Furniture
 Eppinger Furniture Inc.
 G F Business
 Equipment, Inc.
 Harter Corporation
 Helikon Furniture Co., Inc.
 International Contract
 Furnishings, Inc.
 Intrex, Inc.
 JG Furniture Company
 Knoll International
 Lehigh - Leopold Furniture
 Division of Litton Industries
 Metropolitan Furniture
 Corporation
 Herman Miller, Inc.
 The Pace Collection, Inc.
 Harvey Probbler Inc.
 Jens Risom Design Inc.
 Edward Axel Roffman
 Associates, Inc.
 John Stuart International
 Stendig Inc.
 Stow/Davis
 Thonet Industries, Inc.
 Turner Ltd.
 Vecta Contract Company

You're invited...

Designer's Saturday New York October 7-8

The tenth anniversary of Designer's Saturday will be held on October 7-8 in the New York showrooms of the members of Designer's Saturday, Inc. New introductions will be shown in all showrooms.

Special private showing of selected galleries at the Metropolitan Museum of Art on Saturday evening, October 8th, from 7-9 PM.

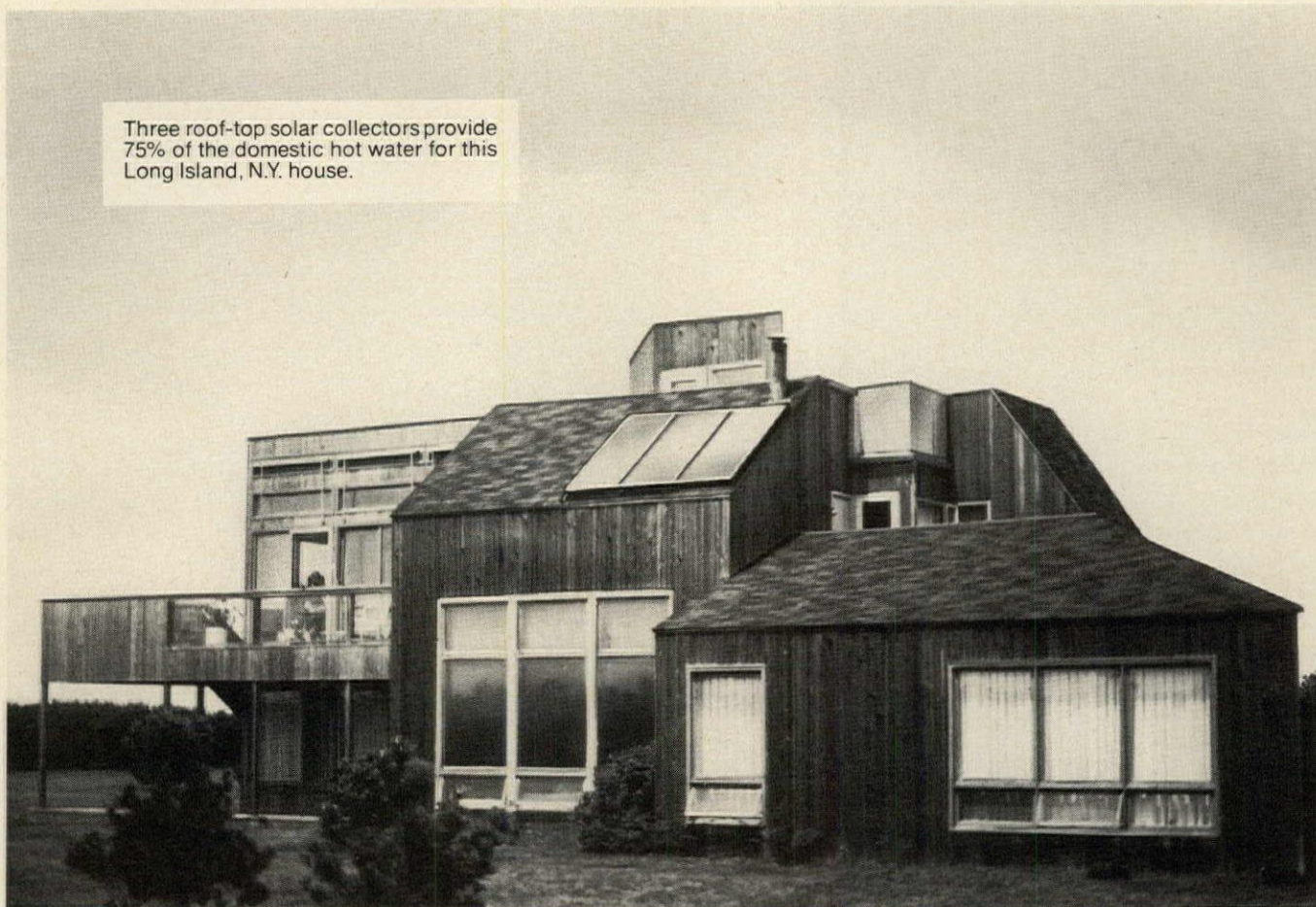
Special hotel rates are available for those attending Designer's Saturday. Special group air fares including hotel are available from Los Angeles, Dallas and Chicago.

For more information, write
 Designer's Saturday, Inc.
 P.O. Box 1103
 F.D.R. Station
 New York, NY 10022

P/A will be reporting on this in September.

Copper solar collectors give you energy on the house.

Three roof-top solar collectors provide 75% of the domestic hot water for this Long Island, N.Y. house.



Solar energy is here today! It is dramatically cutting costs of heating water for homes, schools, recreation and commercial buildings in all types of climates. Solar collectors also provide energy for space heating and air conditioning.

When you design, specify or install solar collectors, insist on copper for the absorber plate and for the tubes which circulate the fluid. With a blackened surface

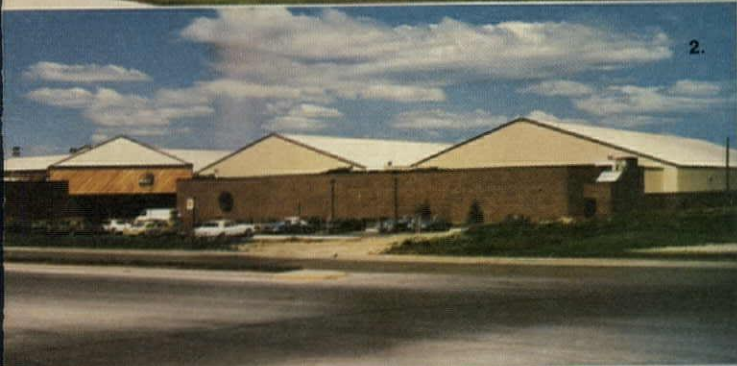
coating, it's the most efficient material for collecting the sun's heat. Copper needs practically no maintenance, is easy to work with, and resists corrosion.

Asarco is a major copper producer with a stake in the energy future of America. The Sunworks division of an Asarco subsidiary is a leading fabricator of solar energy systems. ASARCO Incorporated, 120 Broadway, New York, N.Y. 10005.

ASARCO



1.



2.



3.



4.



5.



6.

6 COMPELLING REASONS TO LOOK INTO PRE-ENGINEERED STEEL BUILDINGS.

These six award-winning buildings give you a good idea of the great design flexibility at your command with pre-engineered steel buildings.

You can use this type of structure with almost any design concept and finishing materials. You're not confined to simple projects either, as these pictures demonstrate. You can use the pre-engineered steel building for both low-rise construction and more complex, medium-rise projects, as well. It functions as a system in itself—or as an addition to another structure—or as a source of subsystems.

Computers have speeded up the tedious, repetitive aspects of a job. Procurement scheduling is precise. On the site, construction moves faster with less reliance on field work, more on factory-controlled quality. All this keeps your project costs highly predictable.

These architect-designed pre-engineered buildings were cited by the Metal Building Dealers Association for 1976. **1.** Gammatronix, Inc., Dublin, Ohio. Architect: Trautwein & Associates, Worthington, Ohio. **2.** Mirabel Racquet Club, Inc., Pte-Claire, Quebec. Architect: Tolchinsky & Goodz, Montreal, Quebec. **3.** Genova, Inc., Davison, Michigan. Architect: Richard L. Currie, Goodrich, Michigan. **4.** Olympia Technical Community College, Olympia, Washington. Architect: Bennett, Johnson, Slenes & Smith, Olympia, Washington. **5.** Acme Cleveland, Inc., Freemont, Ohio. Architect: Ray W. Covey Associates, Southfield, Michigan. **6.** Adams County Consumers Co-op, Brighton, Colorado. Architect: Robert Greenberg, Kansas City, Missouri.

FREE facts for architects and engineers

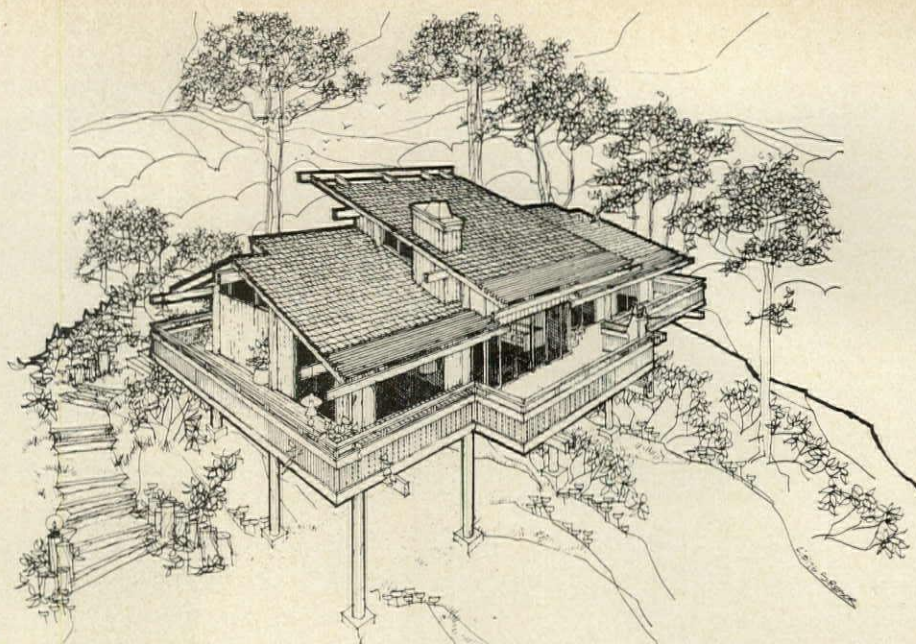
U.S. Steel has compiled a detailed, comprehensive library of design and specification booklets on this subject for practicing architects and engineers, called *Variations*. And "variations" is just the word for it. It's a storehouse of information and options available to you from 23 of the country's leading steel-building manufacturers, filed in a sturdy library case.

Nearly 5,000 architects and engineers have *Variations*. If you don't already have your copy, we'll be glad to send you one absolutely free. Write on your letterhead to: United States Steel, P.O. Box 86 (C803), Pittsburgh, Pennsylvania 15230.

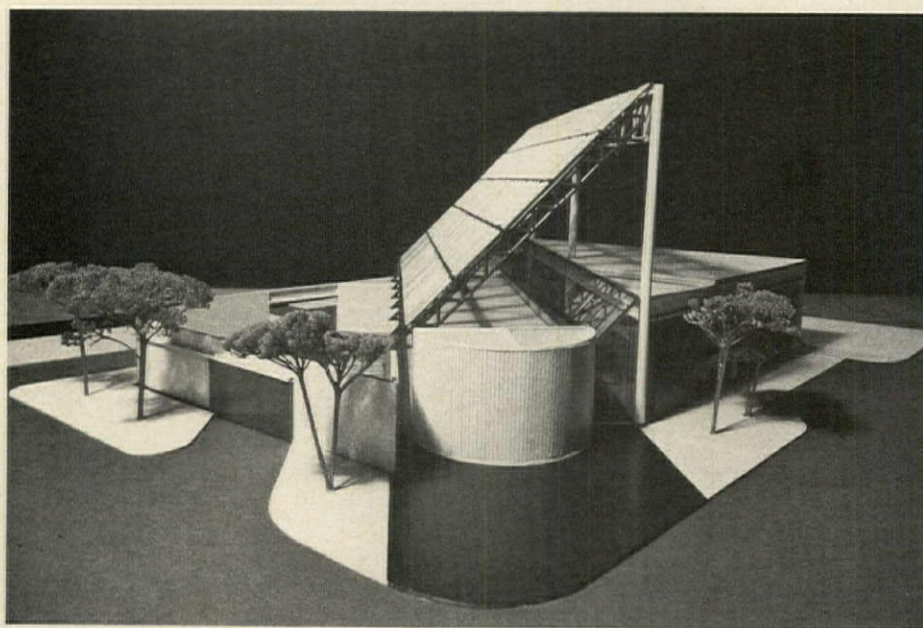


United States Steel

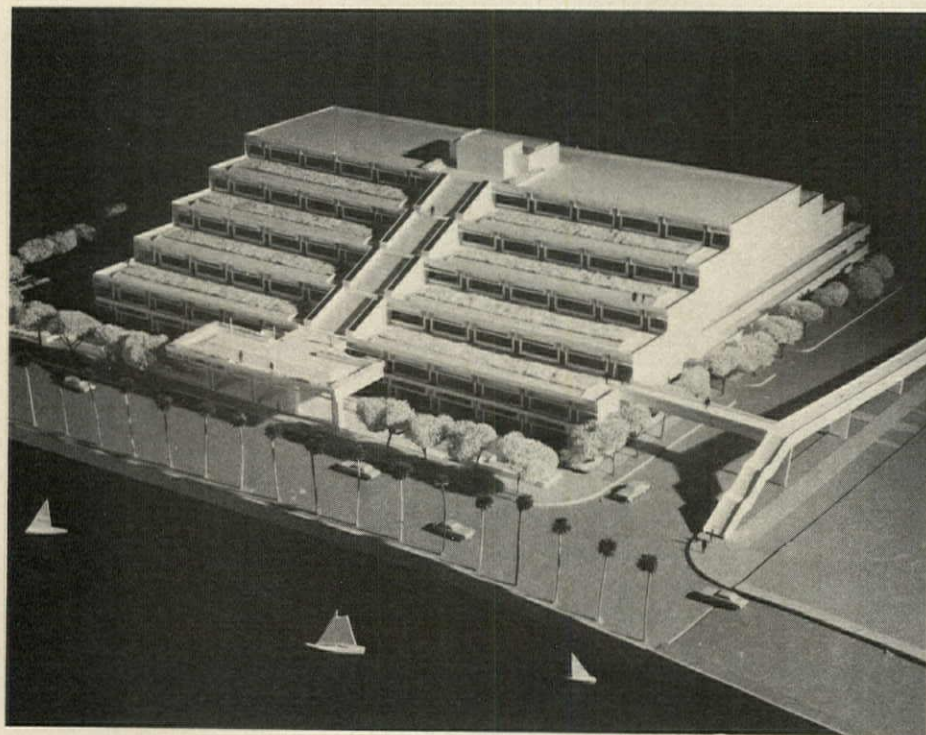
In progress



1



2

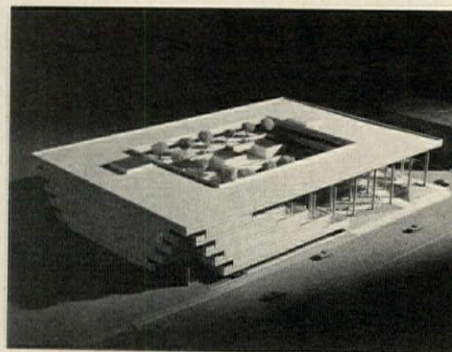


3A

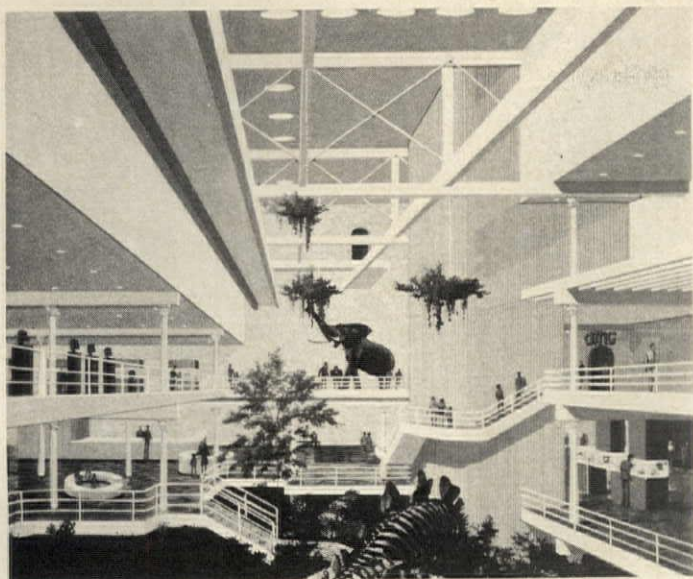
1 Pole houses—Architect Stuart Resor of Encinitas, Calif., has developed a pole house package and is "swamped with requests" for plans; he's built seven structures—including five houses—and is currently applying the concept to mobile home design. The advantages are structural strength in this earthquake-prone region and the ability to leave the natural site relatively undisturbed.

2 Solar fire station—Nathan S. Leblang & Associates of Baltimore, formerly Designbank, is the architect for an all-solar heated and cooled fire station in Baltimore. The building will have a 60-ft collector angled at 45 degrees on a tubular truss wall. Partial funding for the solar system is from the national Energy Research and Development Administration. The station is two buildings separated lengthwise by a skylit corridor.

3 Government buildings in Florida—William Morgan Architects of Jacksonville has designed two buildings now under construction at costs below the original budget. One is the Florida Regional Service Center (A) along the riverfront in downtown Jacksonville. The six-story building uses air rights above both a city parking garage and a federally funded bridge ramp. The Federal Courts Office Building (B) in Fort Lauderdale has an interior courtyard that extends to the sidewalk to link with a major street intersection. Energy conservation measures include window overhangs and outside walkways instead of interior corridors.



B



4

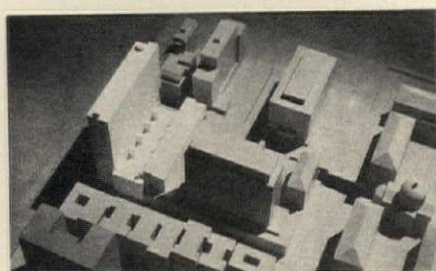
4 Commercial buildings recycled into museum—Five cast iron buildings in Louisville, Ky., are being converted into the Louisville Museum of Natural History on a fast track construction schedule. Completion is set for July. The architect is Louis & Henry of Louisville.

5 Boston zoo—Expansion of the Franklin Park Zoo in Boston to present an African continent environment is underway. Architect for the series of pavilions, all linked by concealed connectors, is Huygens & Tappé of Boston.

6 Largest ballroom in Mideast—Iran Air is adding a 41-story, 587-room tower next to the existing 18-story Arya-Sheraton giving the complex a total 791 rooms with greatly expanded function spaces including the largest ballroom in the Mideast. Also planned are a revolving rooftop restaurant and parking garage for 500 cars. Architect is Welton Becket & Associates.

7 Columbia University housing—Fund-raising has begun for a \$20 million student housing complex primarily for undergraduates at Columbia University, New York, and construction is expected to begin next year. Architects are Gwathmey Siegel and Emery Roth & Sons, both of New York. The first dormitories built since 1959, the project will include 10 walk-up houses and a 14-story high-rise of duplex units.

8 Gymnasium/classroom—The expansion program of Duchesne Academy of the Sacred Heart, a private girls' school in Houston, TX., is underway with a 15,000-sq-ft gymnasium and 15,000-sq-ft classroom building organized along an outdoor linear arcade. The gymnasium and pool will have external double steel columns and trusses spanning 80 ft. The architect is William T. Cannaday & Associates of Houston.



7

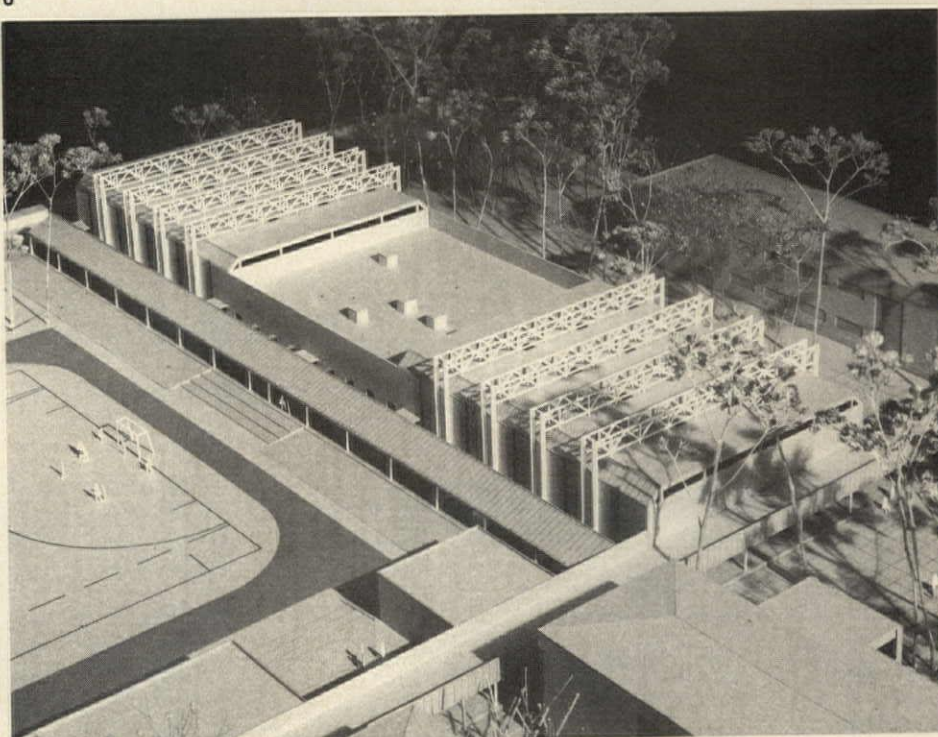


Steve Rosenthal

5

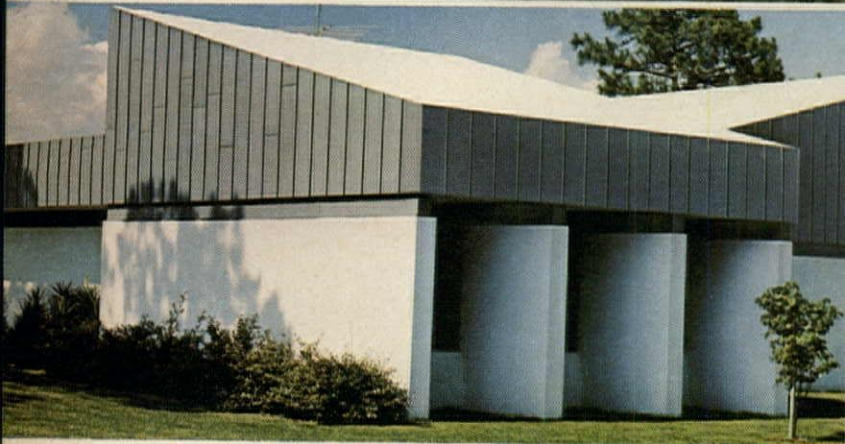


6



8

Reduce on-site costs of coping, flashing, fascia, mansards



MICROZINC 70

New, pre-engineered application of zinc

Microzinc 70 is well known for its beautiful pre-weathered patina — but it is even more attractive in economical ways! Each Microzinc 70 system is delivered in pre-engineered form. Installation is so simple that on-site labor costs are substantially reduced. No cleaning, no special soldering tools, no painting needed — and no priming should you want to paint.

Once Microzinc 70 is installed it becomes still more attractive . . . no maintenance problems: no leaks, no staining from run-off, and no rotted materials. Investigate the on-site cost savings of Microzinc 70

pre-engineered components. For further information, write today or call 615-639-8111.

Now available! Traditional lead roofing in two new Ball alloys: calcium/tin or soft lead.



**Metal
& Chemical
Division**

Greenville, Tennessee 37743 • 615/639-8111

Architecture cross-examined

The 563-ft-long support services wing contains entrance lobby.



A major work in the output of the firm of Richard Meier & Associates, Bronx Developmental Center has been awarded, praised, criticized, and scrutinized. The circumstances surrounding it indicate why.

The Bronx Developmental Center, called by *Newsweek* architect Richard Meier's "crowning achievement" is without doubt a significant work. That significance, however, does not merely correspond to its place in the evolution of an architect's *oeuvre*. Nor does it pertain solely to its aesthetic achievements. The building has been caught in the midst of a controversy regarding its uses, a controversy which in turn focuses on issues regarding social, cultural—and architectural—values that concern both the general public and architectural professionals. The building thus serves as a catalyst for further debate on the place of "architecture,"

its meaning in real life, its influence on the landscape.

Bronx Developmental Center can be investigated on three separate levels. First, with regard to the evolution of an architectural solution to formal, functional, and technical problems. Second, its solution to the program—how it operates pragmatically and semantically for its clients and users. Third, it should be considered in a larger symbolic role: What sort of statement does it make about architecture, about society?

The architectural artifact

In terms of architectural problem-solving, the building is clearly a masterpiece, one of refinement, not invention. Its scale and complexity are handled with a logic, consistency, and certitude that confirms the talents and abilities of this small office to execute major works of architecture successfully. There is no disintegration of the idea when the

Bronx Developmental Center



Articulation of residential wing on east boundary (above) reflects apartmentlike plan; stepped-back massing is apparent from northwest corner (left). On southwest corner (opposite) curved auditorium wall is revealed.

form meets the demands of a complicated program. Neither is there flabbiness, a contrived pyrotechnical display of forms, nor a scheme entangled in a miasma of anxious design motifs. The fact that it unswervingly and confidently proclaims its architectural identity has to be admired. It makes a courageously optimistic statement about architecture's ability to transcend its essential category of building, unselfconsciously proclaiming the need for architecture no matter where, for whom, or when. But by making that statement this work of architecture has heightened the crises of conscience that plague architects today.

Any architect who has ever obtained a similar type of commission from a public agency is in awe of the level of architectural quality illustrated by Bronx Developmental Center. One client for the hospital, the New York State Facilities Development Corporation, has to receive some of the credit: a public benefit corporation, FDC was created in 1964 to improve the quality of mental health architecture by hiring talented architects and helping get their projects through the stultifying bureaucratic process. There were still to be some drawbacks: the project, begun in 1970, was not to reach completion for seven years. It was to be the victim of budget cuts (originally the center was designed for 750 instead of 354 residents), and a not quite defined clientele of mentally retarded in a county where a quarter of its population was on welfare.

In addition to that there was the site, a triangular 18-acre stretch with the Hutchinson Parkway on the east, a network of railroad tracks to the west, and warehouses on the western boundary. And this center had to be part of a "hospital park" of other existing facilities that came in all sizes and architectural styles. Their placement and juxtaposition fail to reveal the hand of a master planner at work.

Rather than relating the project to this melange in terms of architectural treatment (beige brick, shed roofs, or towers) Richard Meier & Associates chose to design a distinctive self-contained object. And rather than open the design out to the surrounding desolate site they turned the building in on itself. They made the center four stories high and organized it around a large courtyard open at one end to link it to the one piece of unimpeded green that did exist. Parking was placed on the western boundary, a buffer between the center and the warehouses, connecting to ser-

vice and access roads.

The parti relates to the program extremely logically. Entrance lobby, offices, cafeteria, and workshop are aggregated in a 563-ft-long wing along the western edge of the court, while residential units, with small dining areas, activity rooms, waiting rooms, and doctors' offices are situated along the eastern boundary. Linking the two is the wing containing the larger recreational spaces—gym, pool, and auditorium.

While the two linear blocks are placed in parallel alignment, their design is quite distinct in the elevations and massing, which in turn reflect changes in plan. The highly articulated elevations give many clues to this disposition of functions and activities within. From the taut, tightly bound surface of the west façade, broken by the entrance lobby, the building's elevations shift in rhythmic progression and counterpoint: On the rear side of this support services wing a semicircular cafeteria with a diagonal glazed wall protrudes out into the court, as does a self-contained "house" to be used in the domestic life program.

Opposite, the west-facing elevation of the residential wing generally maintains the smooth regularity of the support wing but half-suggests the volumetric articulation on the other side. Its massing is broken where staff offices for residential units are pulled away from the volume and the block is stepped inward to accommodate the eastern boundary of the site. Then on the elevation facing east, full expression is given to the separation of living units into blocks of three eight-person apartments. Each apartment, with two-person or four-person bedrooms shares a living room, expressed by small quarter circle protrusions jutting out of each block (see plan, p. 52). At a reduced scale these semi-public spaces recall the semicircular walls of the more public spaces on the other side, the cafeteria and the auditorium.

This reverberation of planar versus volumetric motifs endows the different parts of the building, sheathed in aluminum paneling, with legibility. The progressive layering of spaces from public to the private domains is reinforced frequently by the fenestration. The window-walled expanses of the public areas, the barrel-vaulted skylights of the bridges, the horizontal bands of windows marking offices or classrooms, and the square inset windows of the apart-



Bronx Developmental Center

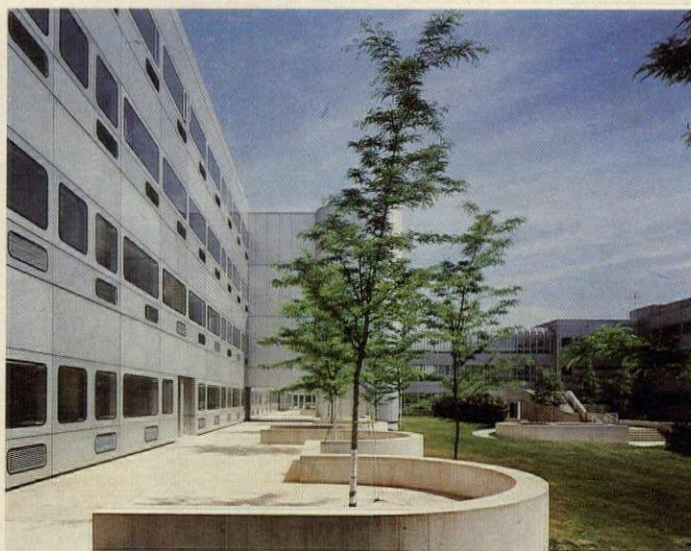
ment units generally work as an exterior signification system, referring to the spaces within.

Throughout the complex, the various design elements engage in relationships of resonance and reverberation. Entering the lobby, one apprehends simultaneously the 32-ft-high indoor room (lobby) and completely open outdoor room (the courtyard) seen through the window wall. Similarly, in a play of oppositions, inside stair is seen in reverse juxtaposition to the outside stair. Curved stair towers, moved out from the rectangular volumes and solidly clad in paneling turned vertically, add another counterpoint to the composition.

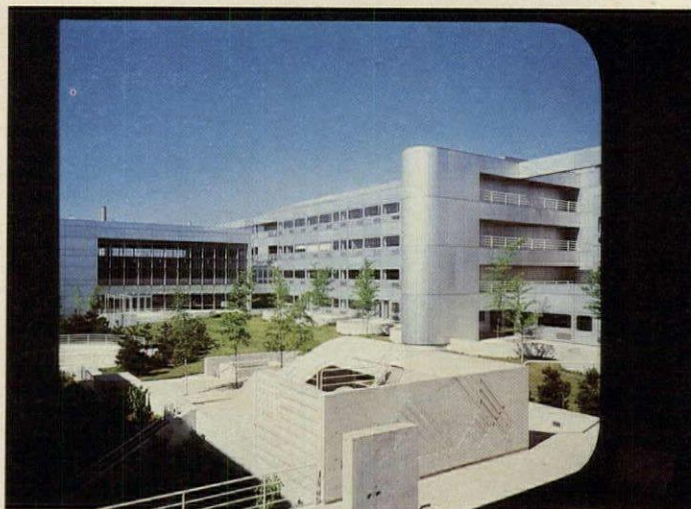
But in addition to the thematic layering of elevations west to east, another operation takes place moving from south to north with regard to the man-made versus natural environment and closed versus open progression of spaces. From the gym and pool one moves outside to a very active open court, containing outdoor amphitheater and other structured play areas. On the other side of the bridge (enclosed) that links the two linear blocks is a less structured court for more casual use. Beyond that court, bordered by another bridge (open) is a full expanse of landscaped green. This progression is also marked by the handling of the north and south elevations of the center: the south almost fully closed; the north, facing the green, almost fully open.

In terms of scale devices, Meier has related the various elements to human dimensions—the 5'-9" dimension of Corbusier's Modulor provides the module for the grid of the plan and elevations. Despite the size of the building or the abstracted quality of its formal properties, everywhere elements recur that constantly relate to the human dimension and to a system of mathematical proportions. In addition certain architectural precedents have been absorbed and assimilated into its internal code. The introspective organization of spaces around a court, the pulling out of objects into that court, or open room, of course, owes a great deal to Corbusier's La Tourette. The repetitive breakdown of units recalls his scheme for Venice Hospital. The combination of a modular open-ended plan with industrialized curtain wall continues a notion developed with Berlin Free University and its use of Jean Prouvé's sandwich panel system of weathering steel.

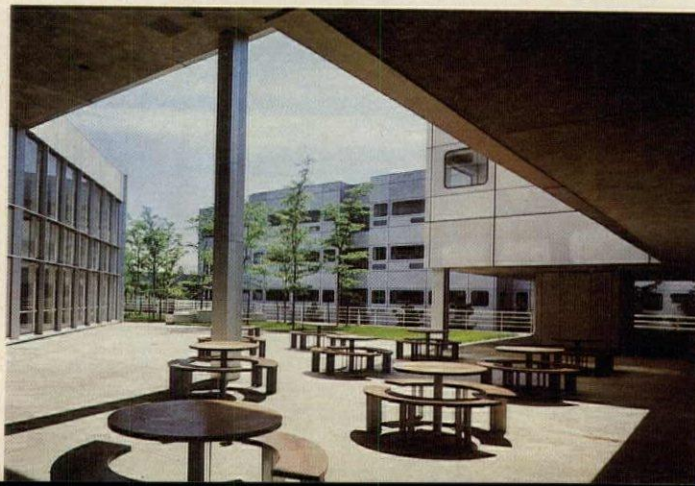
Originally Richard Meier & Associates wanted an aluminum sandwich panel finished on both sides that would allow the erection of the curtain wall on site, without the need for a girt-type framework. For reasons of economy they eventually decided on a rolled sheet aluminum panel, in which the interior face would be finished on site with gypsum board. In conventional use these rectangular panels would have been placed vertically on end. To give themselves a more flexible fenestration pattern, the architects worked out a horizontal alignment, a decision which meant thicker panels and girts. However, the panels still could be rationalized to the extent of having windows stamped out and girts attached at the factory so they could be installed directly onto the building frame. The large window walls of the communal/recreational spaces have an aluminum frame that fits onto a girt system, with mullions the same depth as the aluminum panel.



In the "learn to play" courtyard (above and below) 260' x 150', is an amphitheater, slide and other activities adjoining indoor recreation.



On other side of bridge is 218' x 110' commons court (above, below).





The U-shaped complex is closed on south end facing other buildings (above), open on north elevation (below) facing a small woods (not shown).



Bronx Developmental Center

If the building is a remarkable achievement, it nonetheless does contain elements that jar: If something is so rigorously consistent to its well-defined architectural laws, one notices the loopholes, so to speak, the inconsistencies, the chinks. If something attains a superior level of quality, attention is riveted on its imperfections.

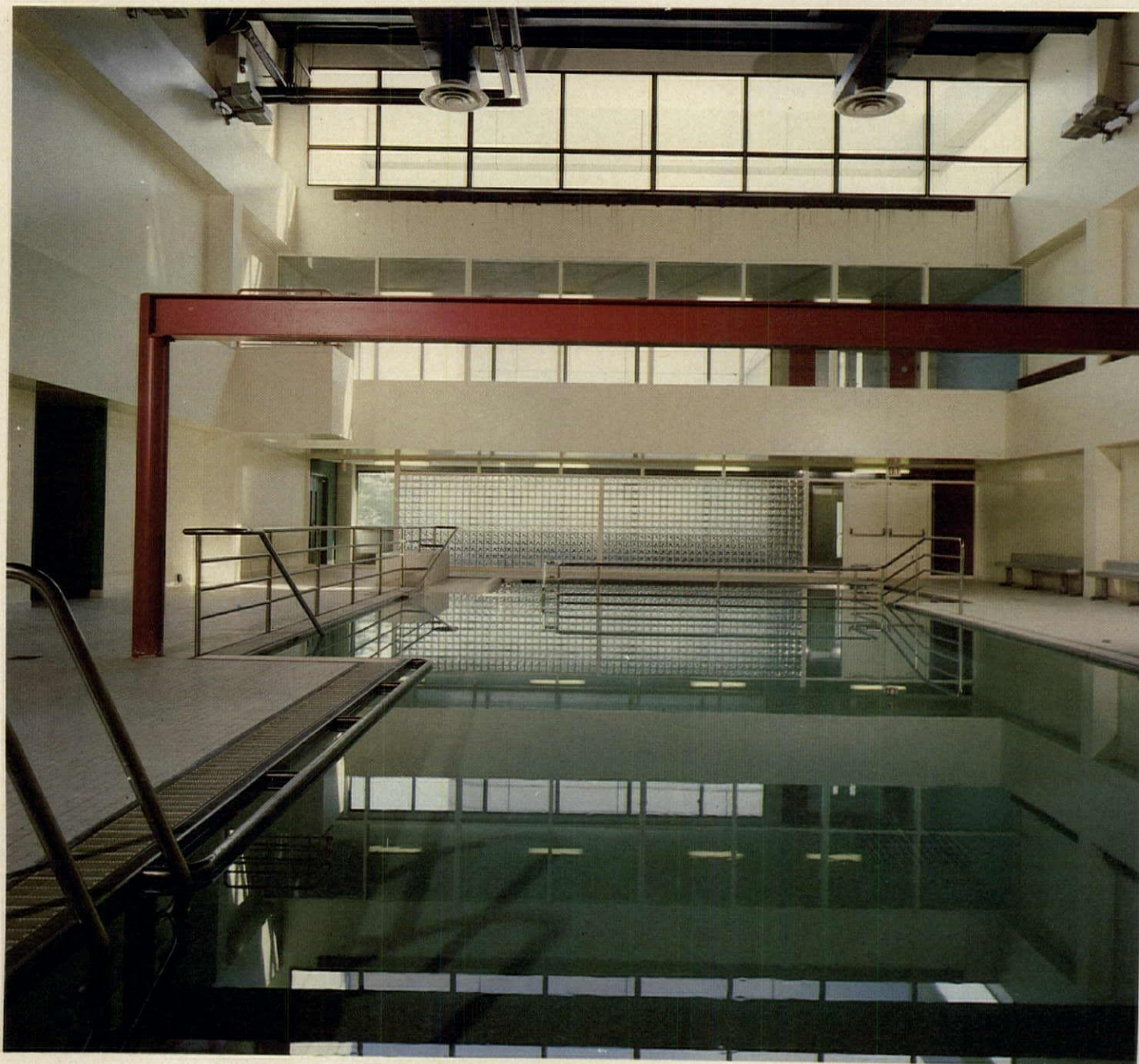
The discoloration in some of the panels can be discounted owing to the limited choices for aluminum panels systems, and the still somewhat experimental quality of this skin. Similarly, the workmanship inside the building strikes one as inferior, but compared to what? Compared to the skin, yes, but compared to other state construction jobs, the workmanship is fine. The detailing inside varies depending on the spaces: for example, the cabinet partitions in the dining activity areas, the walk-in closet in the house are extraordinary. One almost forgets the clunkiness of the

heating and air conditioning units in hallways and classrooms.

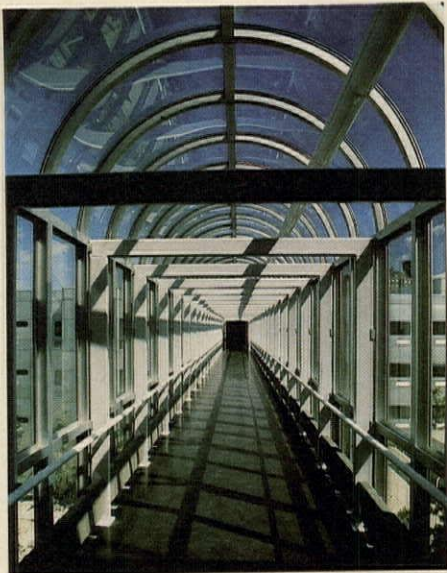
The gasketed windows integrated into the panels, so visually appropriate outside don't carry the same rationale when embedded in a gypboard plane inside. The rounded corners of the windows become more obvious, more insistent. Inside too, the rich color palette is stunning but obsessive. The 47 colors raise obvious questions of maintenance and of arbitrariness. One doesn't ask that they be used to code the different spaces (blue is for bathrooms), but a system of references could have been devised to operate on the same explicit level as the design of the elevations.

On the other hand the courtyards seem too explicit, too aggressively designed. For, while they tightly accommodate a diverse open space program for the center, formal characteristics dominate. With the toughness and sleekness of the machine-made skin, one wants something very soft, natural, and unstructured there. Although a 12-ft drop in grade called for terracing and permits two of the

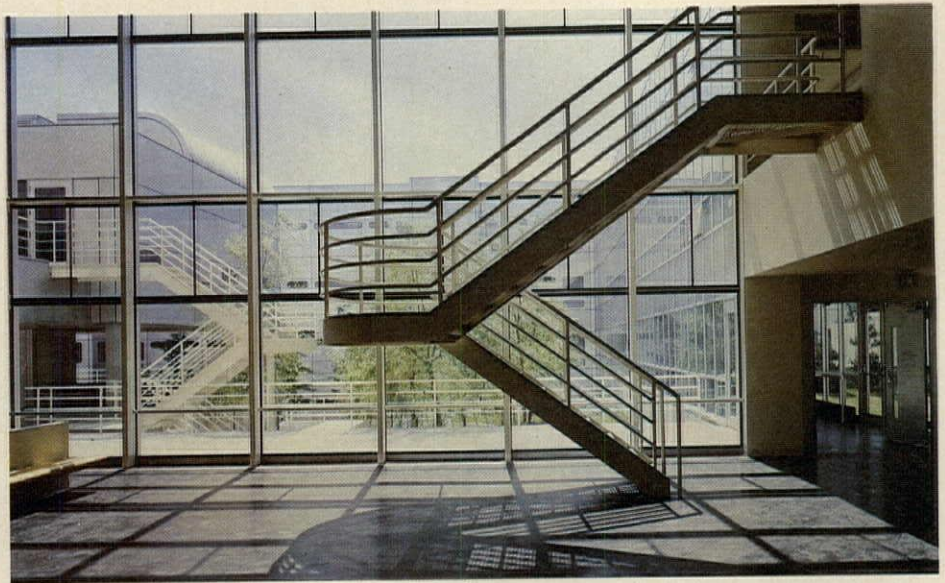
Where light, line, and reflection come together: the pool (below); enclosed bridge framed by view from services wing (opposite).



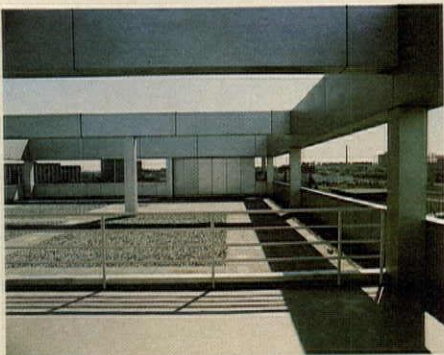




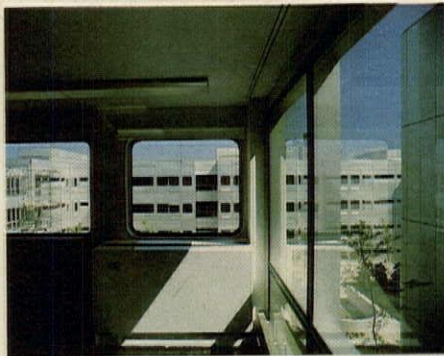
Enclosed bridge links services to living wing.



In the 32-ft-high lobby a cantilevered stair is seen in spatial juxtaposition with stair outside.



Terrace level at south end of services wing.



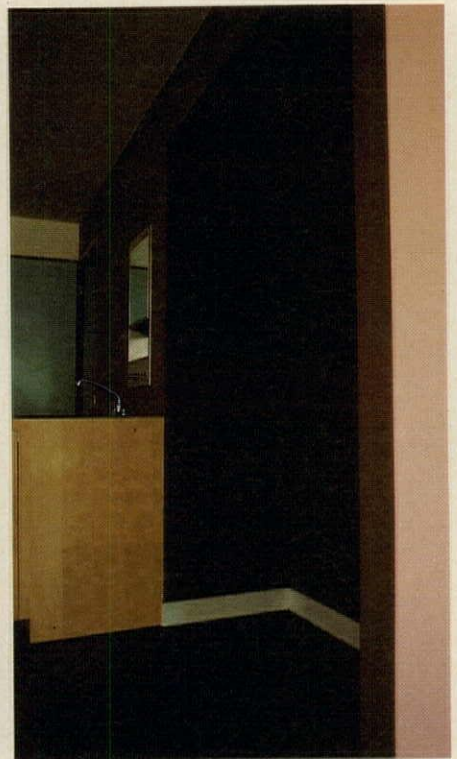
Interior offices of yet unfurnished complex.



Architects designed the cabinet/partitions (above) to separate activities in residential units.



Polychromed walls are found in subtle combinations throughout, even in the hallways (below).



Forty-seven colors are used for painting interiors; generally vivid hues in more public places.



four levels immediate access to the ground, the concrete, for now at any rate, still dominates the greenery.

The most superb formal aspects of the center are its skin, its parti, and its massing. If the spaces within are *nice* (in comparison with other hospitals and institutions, exceptional), the kind of impact the envelope makes isn't generally sustained within—except in several instances. One is the auditorium, a remarkable molding of space, artificial light, and circulation. The other is the pool, which is a breathtaking composition; the translucency of the glass block front wall, the gelatinous reflective quality of the water, the arabesque lines of the pipe railing create a compelling and unforgettable image.

Little wonder Bronx Developmental Center is winning awards right and left. The 1977 AIA Honor Awards (P/A, May 1977, p. 23), the 1977 Reynolds Memorial Award (P/A, June 1977, p. 22), a 1977 New York City Club Bard Award, and the AIA's 1977 Bartlett Award for architecture for the handicapped.

But at the same time it has been recipient of all these kudos and accolades it has been receiving other kinds of attention in the press.

Future use

In recent weeks Bronx Developmental Center has been embroiled in the thick of a controversy regarding its potential users. Before it has received occupants, this 354-bed residential facility for the mentally retarded, with its complex array of support facilities, has been called out-of-date in terms of current treatment of the mentally retarded. Since the late 1960s treatment of the mentally retarded has stressed normalization—the creation of normal homelike environments in which a retarded person can learn to function. This sort of thinking formed the basis for the program at Bronx Developmental Center, a program fashioned as a part of an array of community services for the mentally retarded. The thrust of the residential program was towards habilitation, with living spaces and a special team-teaching staff intended to foster these goals. Thus residential spaces were specifically programmed as small clusters of apartmentlike units in order to approximate normal life and break down institutional associations. The program called for eight-person apartments with two- and four-person bedrooms sharing a common living room and bathroom. Three of these apartments form a larger unit with a common dining room, larger activity space, staff offices, and other auxiliary spaces. Since the Center is part of a whole community program, spaces are also designated where the mentally retarded living in half-way houses or homes may come for interviewing, testing, counseling, or various kinds of instruction.

The assumption behind this program is that by creating a small town, a model of the outside world, residents can be trained to function normally. But now groups representing part of the mentally retarded population intended to be moved into Bronx Developmental Center are contesting the creation of an artificially constructed world as the most "normal" learning environment. Their thinking extends the implications of normalization to its proper conclusion: If the mentally retarded person is to lead a normal life, then the best place to learn is in the community, not in an institution that merely simulates everyday life. According to these dis-

senters, a large facility is always an institution, no matter how "uninstitutional" its design or program. Therefore their recommendations favor homes of not more than 15 beds situated in the heart of the community, with a program based on decentralized activities.

This group basically represents the mentally retarded at Willowbrook Developmental Center, an old custodial type of institution that was the scene of scandals in the early 1970s, when it was discovered to be rundown and overpopulated. A federal class-action law suit brought by the parents of the Willowbrook "class" and a consortium of organizations resulted in a consent decree ruling that Willowbrook would have to be gradually reduced in population from 5000 to 250 by 1981. Many of the mentally retarded have been already moved into community programs; 400 however (who are legally Bronx residents) are slated now to be located to the Bronx Developmental Center. The parent group and the court-appointed Willowbrook Review Panel contend that the Willowbrook class should move directly to decentralized facilities. If the judge decides in their favor, the decision would not necessarily mean other mentally retarded people would *not* be moved into the Bronx. But it could establish a certain legal precedent for other parents to bring suits against the state in order to obtain similar action for their mentally retarded children.

(For late word on the resolution of the controversy over transfer of residents, see News Report, p. 30.)

These sticky legal issues have little to do with the architectural design of Bronx Developmental Center, for according to this line of reasoning even the Taj Mahal would be turned down. However the architectural design of the Bronx Developmental Center has been brought into the controversy by the plaintiffs to build a case for the placement of the Willowbrook class in the community. The Willowbrook plaintiffs contend that the building is unsafe, a restrictive environment, and not "homelike." The unsafe features alluded to include items such as open railings, open tread stairs, an open bridge, the use of untempered glass in many areas, and some unguarded drops in the courtyard. Already the architects are designing wire infill for the railings, steel plate treads for the lobby stair, and making other small adjustments.

Although these features have become publicized during the hearings, the need for "risk" itself is still a matter of some debate in the psychiatric world. Some therapists claim that a totally risk-free environment would be unnatural. Certainly it must be pointed out that the center is much

Clarification: Richard Meier has pointed out inaccuracies in the reference to the Bronx Developmental Center in the P/A Editorial, June 1977 issue, p. 8. The project, he asserts, is not "entangled in suits" which have delayed its occupancy or left its ultimate use in question; the one legal issue affecting the Center, he states, involves the transfer of residents from Willowbrook Developmental Center to the Bronx (see text above). Although unforeseeable events delayed construction for several months, occupancy is proceeding in phases on schedule, according to Meier, in line with projected completion of work under the general contract on July 31, 1977. [Editors]

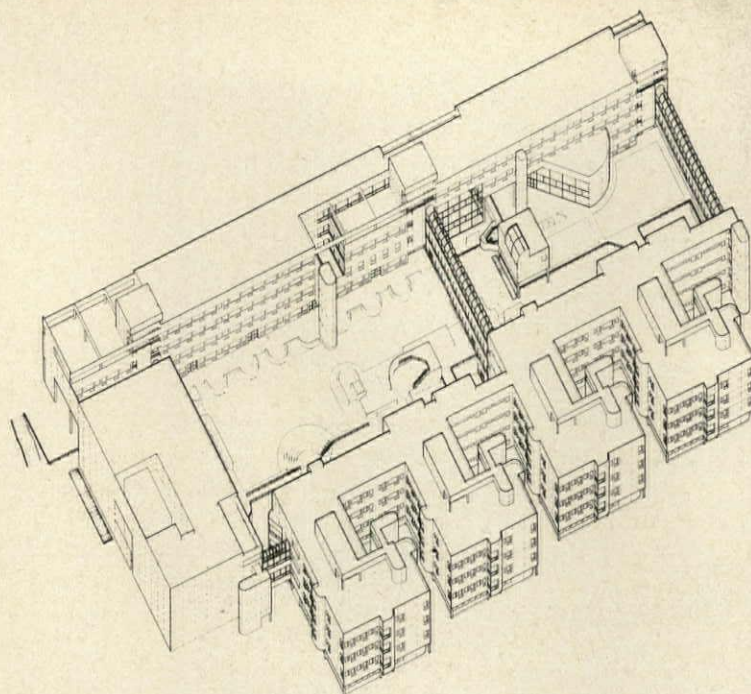
Bronx Developmental Center

less risky than obstacles the retarded encounter living in the outside world—subways, fire escapes, stairs. Otherwise the design conforms to prevailing fire, safety, and barrier free regulations, thus the many ramps and fire balconies.

No place like home

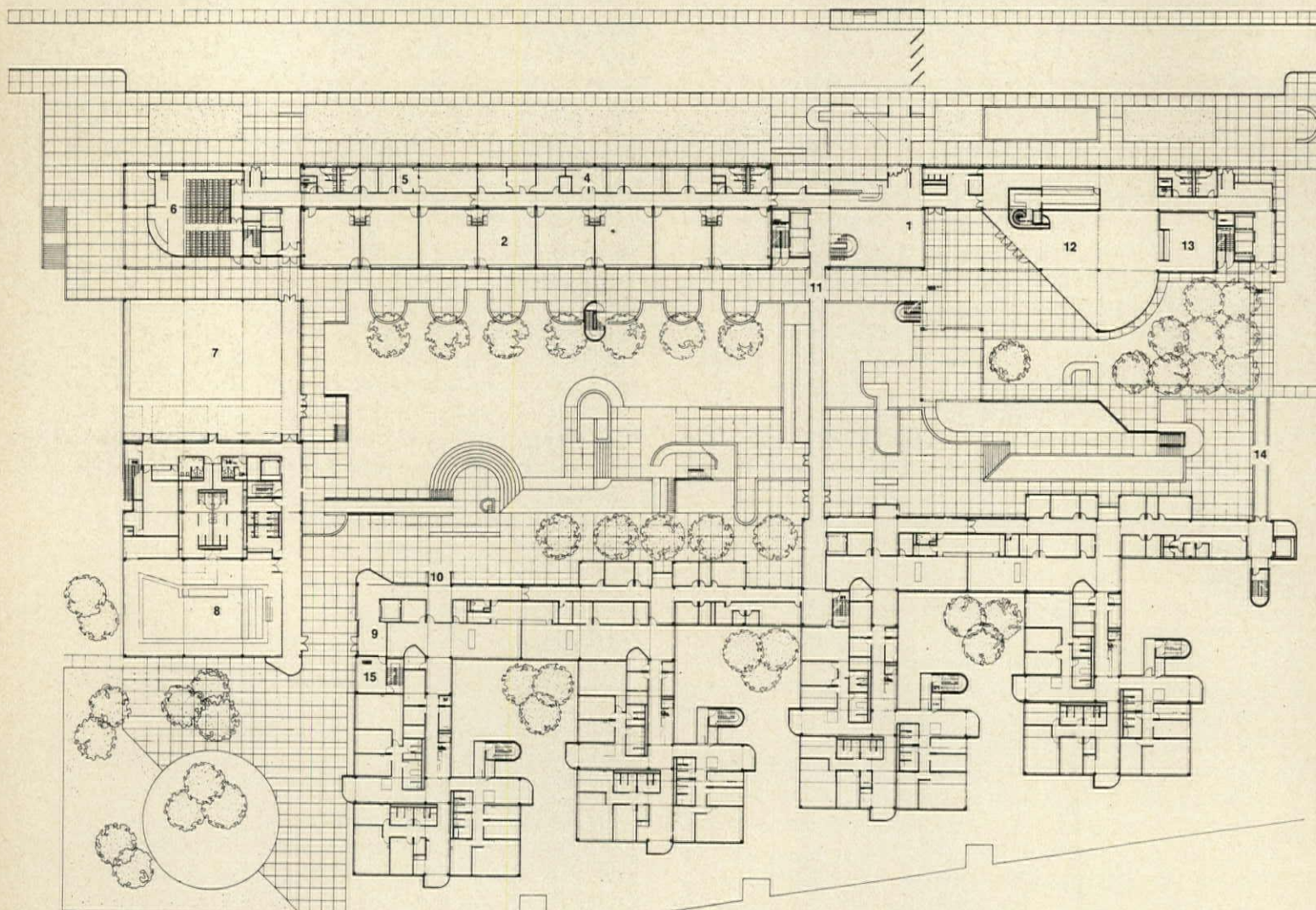
The most controversial issue in the Bronx case concerns the center's intended "homelike" quality. Although furniture has not yet been moved in, making it difficult to visualize how "homelike" the center will be, a considerable amount of criticism has already been leveled at the scheme for not looking anything like home.

The epithet itself signals a convergence of values and attitudes between theories regarding psychiatric rehabilitation and architectural design. It is now commonly argued that Modern Architecture has not been embraced by the public because it lacks accessibility—psychologically, emotionally, intellectually. In order to be understood—and desired—as thinking goes, architecture must be familiar, making associations with a commonly shared cultural and environmental past. The Modernist heritage is considered too abstract, too mute, too pristine to establish that kind of communication, to reflect the messy vitality of everyday life, to be homelike.



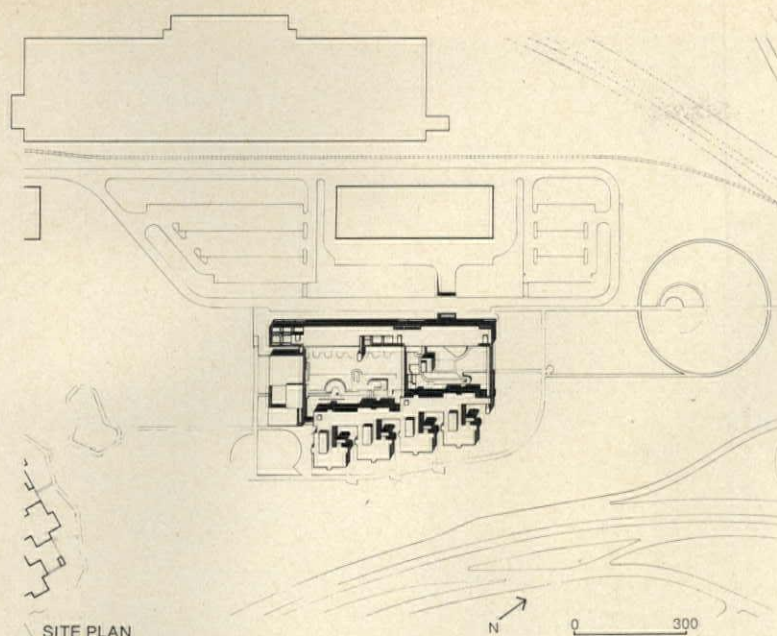
Legend

- | | |
|--------------|---------------------|
| 1 Lobby | 8 Pool |
| 2 Classrooms | 9 Residential units |
| 3 Storage | 10 Lounge |
| 4 Counsel | 11 Bridge |
| 5 Chaplain | 12 Cafeteria |
| 6 Auditorium | 13 Game room |
| 7 Gym | 14 Open bridge |
| | 15 Covered terrace |

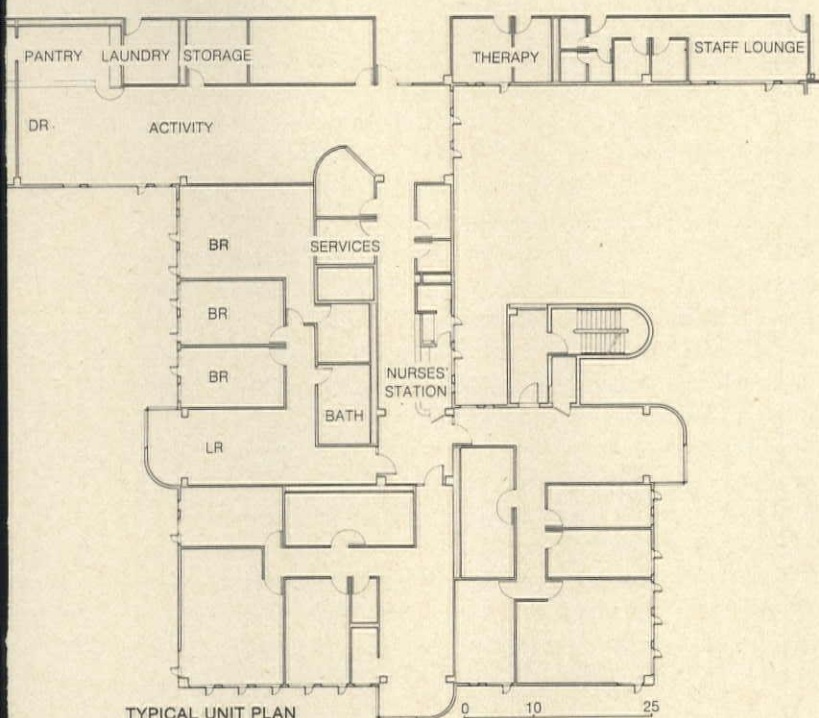


ENTRY LEVEL FLOOR PLAN

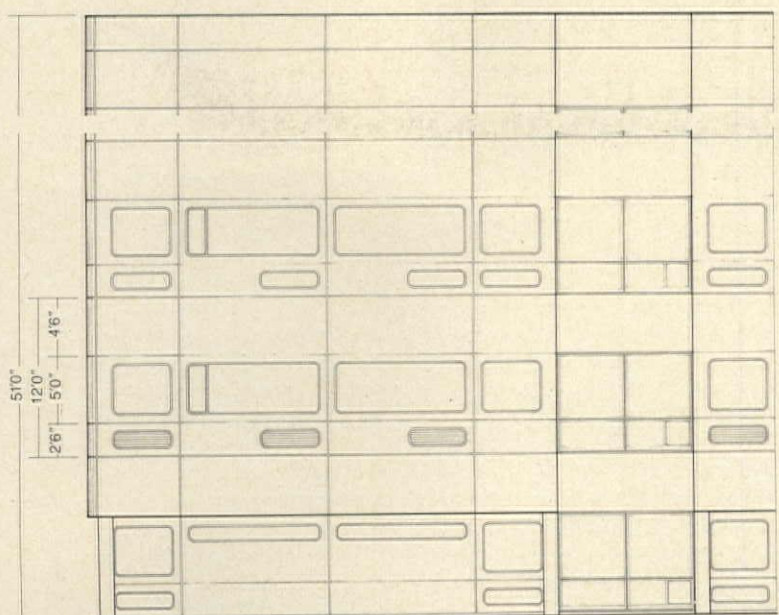
0 40



SITE PLAN



TYPICAL UNIT PLAN



PANEL WALL DETAIL

Of course there is also that problem of deciding what exactly "homelike" is. The program for the Bronx Developmental Center called for a "warm homelike atmosphere (home-type finishes)" in its residential units. Meier gave them 47 different colors, wood cabinets, curved windows, natural light. Perhaps the only homes in which one finds interiors like these are ones designed by Richard Meier. But they are not institutional either.

The exterior of the building especially attracts charges of not being "homelike," with reasonable justification. Although Richard Meier & Associates maintains that the massing of the four-story design takes its cues from nearby Bronx apartment houses, the aluminum skin, gasketed round-cornered windows, and precision detailing carry quite different connotations of machines and airships. One would be hard put to defend it on grounds of being "homelike" unless one grew up in Kocher and Frey's Aluminaire house of 1934. The cool detached mien strikes many as beautiful, calming, salubrious, rational, recalling the utopian promise of Modern Architecture. The lay public often sees it as strange, off-putting, frightening—an impression that may or may not change with time.

From these reactions two questions emerge: Is a "homelike" exterior a tenable architectural criterion? Second, will its users, the mentally retarded, perceive it the same way as parents, architects, general public, and so on? Since they have not yet occupied the center, their reactions can't be observed, and little scientific evidence exists that explicitly describes how the mentally retarded respond to architecture, much less *this* architecture. Will they be alienated by the aluminum skin or be attracted to this bright shiny surface? Will they perceive the place as an institution or as a community? Are these the right questions to ask of their perceptions in the first place?

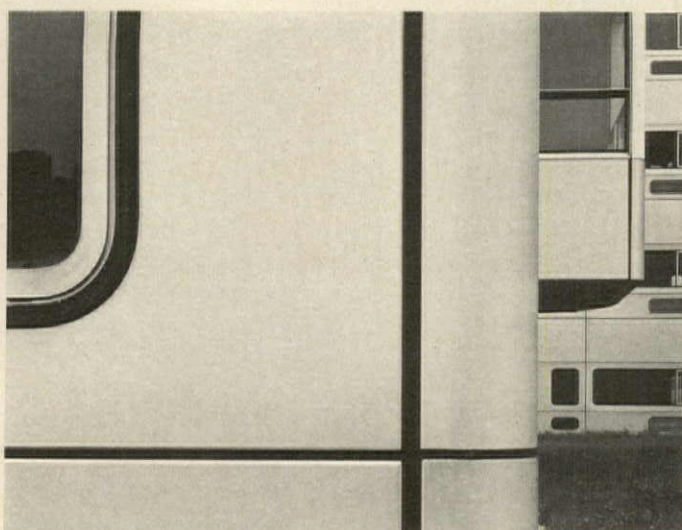
One suspects that if the building were to look more like Meier's earlier project for the mentally retarded, Monroe Developmental Center in Rochester, built in 1974, no one would complain. But while Monroe Developmental Center is a pleasant environment, a one-story masonry block complex organized around courtyards, it belongs to another category of architectural *oeuvre*: It is simply a good building. It is not great architecture.

Which brings up a third question about the Bronx: its work-of-art status. Architecture that openly pursues superior formal quality raises unsettling issues. Was the architect pursuing beauty as an end in itself? Won't he who addresses one part of the equation (form) surely neglect the other (function), the guilty conscience asks. A concern for formal issues reflects the private interests of the architect, pure and simple; the attention to only functional and technical considerations, however, proves his sense of social obligations, our prejudices tell us.

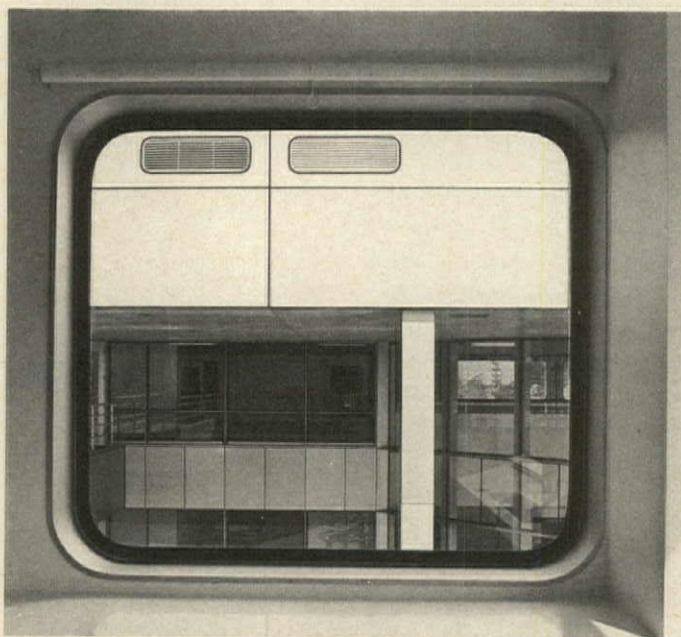
If architecture as an art object inspires guilt, the Bronx Developmental Center compounds one guilt with another: what to do with the mentally retarded? We want them to be made perfect, like the container in which they are contained. And if they can't be perfect, we want them to be hidden, or at least scattered, so we don't have to deal with the fact that three percent of our population is mentally retarded. Bronx Developmental Center lets us know in no uncertain way of their presence.

At the Bronx Developmental Center hearings the head of

Bronx Developmental Center



For the rolled sheet aluminum panel system, architects designed a curved section for corner $7\frac{1}{2}$ -in. thick, the same thickness as the exterior wall (above); windows integral with panel and gasketed (below). A "home" used for training is detached from the center—a villa in this city within a city (above right).



the Willowbrook Review Panel, Dr. James Clements, who is Director of Georgia Retardation Center in Atlanta, testified that the center "represents the wrong concept at the wrong time in the wrong place." He is right for more reasons than therapeutic ones. The beautiful building in an unbeautiful context cannot improve it; it stands alone. It isn't tainted by its surroundings, and neither does it heal. It answers the program as stated, but now the program is the wrong program. And in terms of architectural ideas, its timing is off, since architecture is currently undergoing such intense questioning. In its refinements of architectural precedents the center deserves acclaim, but the acclaim will come with a certain degree of ambivalence. We are in the midst of our own "normalization" period in architectural thinking in which vernacular nonmonumental low-scale architecture is valued. Thus the distinctive, elusive image Bronx Developmental Center communicates to most of the public will



stand as an obstacle to its overwhelming endorsement.

At the same time, to reject the center is to reject the timeless architectural principles it so splendidly embodies, the worthwhile modernist notions it has staunchly upheld. Despite the ambivalence, the controversy, the diverse reactions to the Bronx Developmental Center, the building will no doubt become an important historical landmark. In the final analysis the design is about architecture and its possibilities, qualities that will endure once the circumstances of its difficult birth are forgotten. This is not to say that the architect doesn't have to obey obligations regarding time and place of the work. This building however has been caught in a time-war; one that shouldn't be used to dismiss its achievements. For it does represent a refinement of a building type, one that could have application to a range of other institutional buildings.

An imperfect solution for its particular moment, use, and location, it could transcend that, if only because architecture of superior quality is still too rare. Time will show us what is of lasting value. [Suzanne Stephens]

Data

Project: Bronx Development Center, New York, N.Y.

Architects: Richard Meier & Associates, Architects; Richard Meier, Gerald Gurland, Sherman Kung, Henry Smith-Miller.

Site: 18 acres of marshy land adjoining Bronx Psychiatric Center, Bronx Children's Psychiatric Center, and Bronx Rehabilitation Center on a site bounded by the Hutchinson Parkway and railroad tracks.

Program: 384-bed residential and out-patient treatment center for the mentally retarded of the Bronx community, with apartmentlike units and team-teaching staff; 335,479 sq ft.

Structural system: concrete slab on metal deck supported by steel structure resting on steel H-piles; concrete grade beams and foundations; aluminum sheet rolled paneling for curtain wall.

Major materials: insulated aluminum panels with clear anodized finish; concrete; gypsum board; steel vinyl asbestos tile flooring.

Mechanical system: radiant acoustic ceilings for heating and air conditioning in residential units; incremental room units with heated or chilled water in support services area.

Consultants: Caretsky & Associates, mechanical; Severud, Perrone, Sturm, Bandel, structural; Gangemi and De Bellis, landscape architects.

Cost: \$21,411,038; \$62.33 per sq ft.

Clients: New York State Bronx Developmental Services and Department of Mental Health with the Facilities Development Corporation.

Photographs: Ezra Stoller, except Richard Meier p. 50, middle and bottom.

Meier's type-forms

Richard Meier, Architect: Buildings and Projects 1966–1976. Introduction by Kenneth Frampton, Postscript by John Hejduk. New York, Oxford University Press, 1976. 240 pp., illus., \$35.00 cloth, \$15.00 paper.

Reviewed by Eugene Kupper, associate professor of architecture, UCLA. Reprinted by permission of L. A. Architect, a publication of the Southern California chapter, AIA.

240 ten-inch squares, black and white. Every page is beautifully produced as an object and a representation of the work. Recently, Meier exhibited this book at UCLA and at Cooper Union in the form of an accordionfold plastic laminated strip, 200 ft long. Most of us, however, will use the supple and sensuous paperbound, which is active in the hands as well as a seduction to the eye and mind. Here is a specimen book of a process of architectural design and thought—where the thematic structure of a ten-year period of an architect's work can be recognized as clearly as the quality of the individual projects. In the tradition of architectural disclosures of this kind, the narrative of visual images takes precedence over written text, but unlike most such collections, there is a kind of transparent conceptual overlay that resonates in the visual track. This emanates from two causes; one is in the medium (the graphics) and the other is in the message (the architecture itself). As most of us have come to know Meier's presentations, there are the laser-bright diagrams, line drawings, and photographs of surreal luminosity and contrast. New to the publication, and especially welcome, is an interspersed of construction details (wall sections) that x-rays the built work, and anticipates the realization of projects still unbuilt. The now famous diagrams and axonometrics continue to project their strange aura of analysis and archeological documentation that casts shadowless white light through the work. Each of the projects has been published somewhere (and often better) before, but the compaction of this work into the present object creates a special opportunity to think about the particular and individual form of



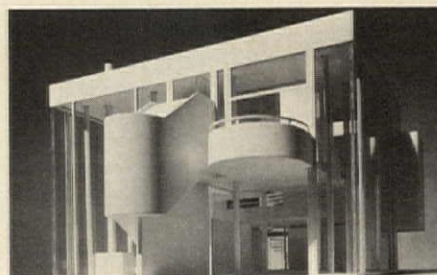
Smith House, Darien, Conn., 1967.



Hoffman House, East Hampton, N.Y., 1967.



Saltzman House, East Hampton, N.Y., 1969.



House in Pound Ridge, N.Y., 1969.

House in Old Westbury, N.Y., 1971.



Shamberg House, Chappaqua, N.Y., 1974.



Douglas House, Harbor Springs, Mich., 1973.



Book: Meier's type-forms

development that Meier chose. The impression one may wish to admit to is that this choice, which seemed to be such an unlikely one ten years ago in the midst of the American Cultural Revolution, and which four years ago erupted into a journalistic melee, has now achieved a calmer state of being in which that initially restricted (reductive?) strategy has yielded its mature result.

Meier, in the fashion of a pianist immersing himself in Bach, or a dancer training for classical ballet, chose to explicitly practice the art of purist space-form with fanatical yet nonideological detachment. (Eisenman's parallel obsession with De Stijl space form and Hejduk's hermetic passion with the low relief still-life of Ozenfant or Gris cemented this pact.) From the period that this book covers, Meier presents seven houses and 13 public buildings, in two sections reflecting this classification. (The houses are grouped as "private buildings" in order to preserve the lexical symmetry.)

The houses are the didactic notebooks of this schooling—the "Meier Variations" or the "Art of the Cube." In the score presented, it reads: Statement of theme (Smith), Counter-theme A—diagonal rotation (Hoffman), Counter-theme within original theme (Saltzman), Restatement of theme as modified by counter-themes (Pound Ridge), Counter-theme B—linear extension (Old Westbury), Statement of theme, purified (Shamberg), Statement of theme, elaborated (Douglas). The theme itself is the triple-layered, triple-tiered cube house, the three dimensional built counterpart to the "9 Square Problem" at Cooper Union. In a lecture by Meier in Los Angeles, the fugal relationship between the Smith and Douglas houses was analyzed as a "critique of an architect looking back over his work, not historicizing or burying it, but seeing it from a perspective not possible at the time of design. It is my own introspective view, an analytical or recuperative exercise. . . ."

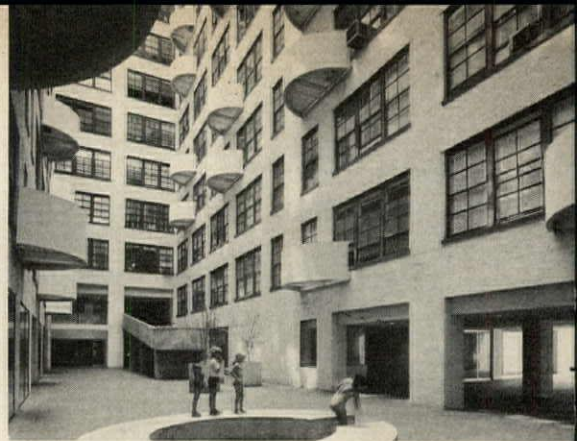
This analytical exercise is for Meier a recognition of the typological development of specific architectural organizations and elements. This allows one to link present work to historical models without becoming involved in personalistic claims or hypocritical disclaimers of historical influences, including ideological and sentimental journeys in the half-remembered. The forms themselves carry a semantic as well as a syntactic coding, but one does not and cannot relive the world of Palladio, Le Corbusier, or Aalto—but one can (and Meier does) critically extend the discipline of the "Dom-ino" and "Citrohan" house organization, or penetrate an entrance façade with a ramp in order to practice a tectonic art of trays, façades, and ramps.

In Meier's discussion of his work, he exposes each project to issues arising out of the *formative possibilities* of the elements and systems that comprise it. The ap-

proach is typological, not functionalist or semiotic. Meier is one of the few major architects today whose work exemplifies in practice this theoretical and methodological shift. Architectural form is not taken as the "solution" to functional/technical "problems." Form is a possibility to be understood. In typological theory, architectural form *includes* program, *includes* structure, etc. It is not different from it, and so it can't possibly "follow" it. The type-forms available to architecture constitute the discipline of architecture. In presenting these specimens as building types, Meier has developed a set of indicative diagrams for *site*, *program*, *entrance*, *circulation*, *enclosure*, and *structure*. The message they suggest seems both analytic and idealistic, as if they were becoming the disembodied and abstracted ghost form—the diagrammatic essence—of the buildings from which they have arisen. White paint or silver panels serve a similar purpose in the buildings themselves. The diagrams conceptually equalize and the optical coatings perceptually equalize. Both mean to draw our attention away from the incidental reality and toward the enduring abstraction.

But Meier's architecture does not abstract itself into an orbit of Platonic metaphysics (although there is always the muse "ideal type" ready to be invoked). Peter Eisenman, on the other hand, has placed his cube house inside a cloud chamber, researching its particle behavior undergoing intellectually thrilling self-generated force fields. The systematic formal design strategies in the house series have parallels in Meier's larger work, but it is here that we can enjoy its obsessive expression for its own sake. After all, these pavilions are of only marginal social utility, and they are not meant as the utopian, ideological ploys of a new architecture. They are of a much higher architectural quality than they "need to be," condemning them to be "only" art, and they challenge us to create an environment that includes the occasional displacement of the commonplace into the sublime. Unhappily, we, like King Kong, can only admire and clumsily fondle Beauty; and we can be driven to the heights by its seductive charm.

James Stirling once described his buildings as "Frankenstein monsters," in that they were assembled from the dismembered carcasses of old architecture and with maniacal surgical procedures joined together into a new architecture. Meier's approach is sympathetic with this, although his Whiteness lessens the danger of infection. In the Westbeth artist's housing and in Twin Parks Northeast, however, the beast itself is encountered in the streets of New York. Meier, who clearly prefers happy endings, shows that the beast is really a prince in disguise. The transformation at Westbeth shows how a basic process of architectural clarification and an accepting attitude toward urban living have joined to create one of the happier places in the city. At Twin Parks, the UDC formula, rather than an existing build-



Westbeth Artists' Housing, NYC, 1970.

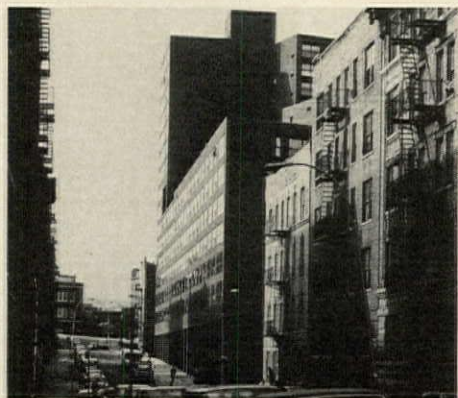
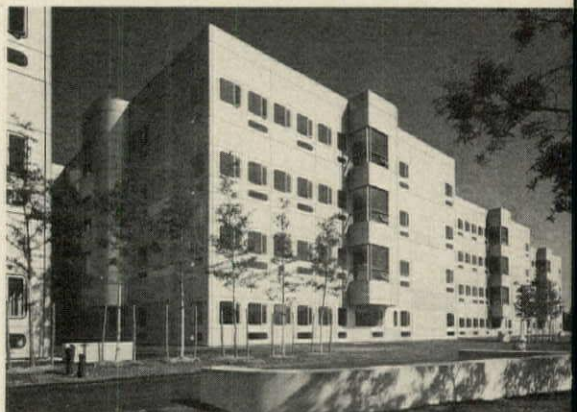
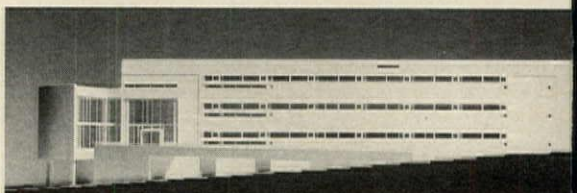


Photo: Dorothy Alexander

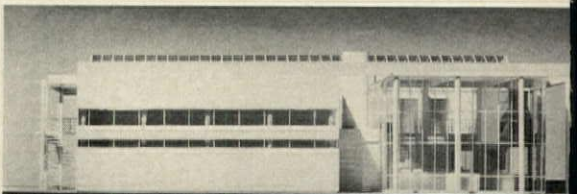
Twin Parks Northeast Housing, Bronx, 1974.



Bronx Developmental Center, Bronx, N.Y., 1976.

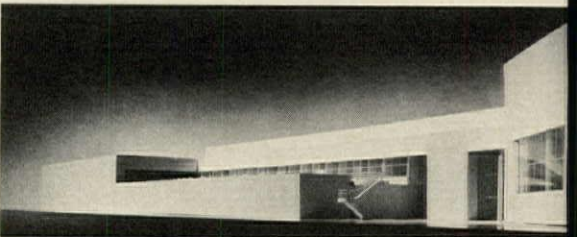


Olivetti Headquarters Bldg., Fairfax, Va., 1971.



Olivetti Branch Office Prototype, 1971.

Fredonia Health & Phys. Ed. Building, State Univ. of N.Y., Fredonia, N.Y., 1968.



ing, was submitted to this approach. Happiness is a little harder to come by in the Bronx, but Meier was able to achieve an urban organization that operates as an intermediary between the existing fabric of tenements and new high-rise apartments, between the walled street and the surrounded open space. The coding of the façades as recognizable urban walls and windows removes any stigma of "housing project," yet carries a high-frequency overtone of optimism that is missing in so much of the surrounding neighborhood. Beautiful (but not too) and ordinary (but not too).

What is so skillfully achieved by a heightened sense of contextual reciprocity at Twin Parks is taken into a heroic state of transcendence a few miles away in the Bronx Developmental Center, a breathtaking silver machine-for-healing. All discussions of Meier's work and motives are superseded by the completion of this major project. The tectonic dualism of skin and frame, set forth in the Smith House, is used here with new technical and organizational intent. The lateral extension and volumetric erosions of the Old Westbury House are now given a clear programmatic rationale. Serial repetition and growth provisions, aspects of the Olivetti prototypes, here have a cultural rather than a mechanical basis. The metal panel system is the result of a series of meticulous studies, begun in 1968 in the Fredonia Physical Education building—a beautiful project that also served to elucidate a strategy for creating a "linear spine" building that can establish spatial subtleties and variations of movement not normally found in this building type. The bus-window panel is used in the Bronx building with a complexity of modulation that we have not seen in Prouvé, Stirling, or Pelli. The programmatic ordering and site structuring are light-years ahead of Meier's previous Monroe Developmental Center for the same client, although the scale is gentler at Monroe, which may be more psychologically appropriate. Urbanistically, this complex is purposefully self-contained, in order to avoid contact with a "no-man's" land. This, however, has led to a stereometric ordering and restricted fabric that are not in themselves sufficient to carry an image of "reality" beyond an institutional one. There is a desperate need for semantic accident and metaphoric inconsistency, "only" for therapeutic, if not aesthetic reasons.

It is this very quality that now is creeping perversely into Meier's work, and charging it with yet another level of meaning. It is contaminating the "purity" of geometry, it is deflecting the perceptual orientation of the user, it is altering the tempo of movement and it is adding color (if only figuratively so far, Meier still insists on natural monochrome or white).

The Olivetti Headquarters building is an assemblage of three or four buildings (stepped, slabbed, shafted, and drummed) with a ramp that takes the entrant 'way out and higher until he achieves his objective just before running out of building to enter.

In the serpentine dormitories for Olivetti and Cornell, the sensual writhing of form that was once limited to handrails and an occasional partition, and used as a contrasting flourish in orthogonally developed space, has now possessed entire building complexes, establishing active relationships with land contour and outdoor space as well as "guiding the path of eye and foot" in new ways. A freer distribution of program on the site and a corresponding freedom vis-a-vis site constraints are being developed in this typology.

In 1973 Meier was a resident at the American Academy in Rome. It was the yellow light and the delicious exuberance of architectural form in that city that infected Meier's heart; he did not retreat to the north to ponder the riddle of Terragni. At Florence, Meier and Hans Hollein were each given a fragment of robust and tactile "found architecture," the Villa Strozzi, against which to posit a new architecture for a museum of Modern Art. Meier's delicious composite may have invented a fifth type in Corb's genealogy of the villa. The "Last Tango in Florence" is enacted on its hilltop with a delicate, distracted, and very energetic white machine dancing in, on, and around the empty shell of a tough and weathered primal house—tolerant of, yet erotically stimulated by, the unlikelihood of the partnership.

Finally, in the most recent project, the Atheneum at New Harmony, Indiana, Meier has inherited a task that exactly fits his present philosophical quandary. New Harmony was intended as both an architectural and a social utopia. Meier writes, "In essence, the problem revealed by Owen's phalanstery is that conflict between an 'ordered' utopia and the 'disordered' reality. This dichotomy has always been of interest to architects who have tended to solve real problems with 'ideal' solutions." As in the Strozzi project, there is a dialectic between realities. Within the building, they are joined in an impacted and "unresolved" relationship between a stable architecture of rectangular grids and volumes, and the speculative, protean architecture of glancing angles, rotated grids, wavy and stepped surfaces, and incompleting structure.

This book is not just a record of a skillful architect's work. It is a document that raises central theoretical questions about the nature of architecture. No one, least of all Meier, can claim that this work is the comprehensive embodiment of what architecture is, or ought to be. Rather, Meier's architecture is his *response* to architecture, a passionate exploration of some of its possibilities. It has the wisdom of knowing the nature of its objectives, and developing strength within the limitations those objectives impose. Over a ten-year period Meier has brought more and more to his work, with clear and orderly intent that has built each thematic possibility into a workable architectural strategy. He leaves much for other architects to take up, yet he has created a body of work and thought that is an inspiration to what an individual can achieve. □



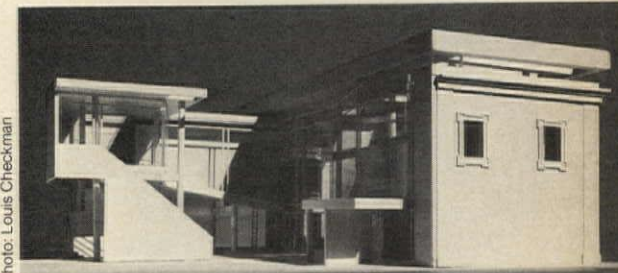
Monroe Developmental Center, Rochester, N.Y., 1974.



Dormitory for Olivetti Training Center, Tarrytown, N.Y., 1971.

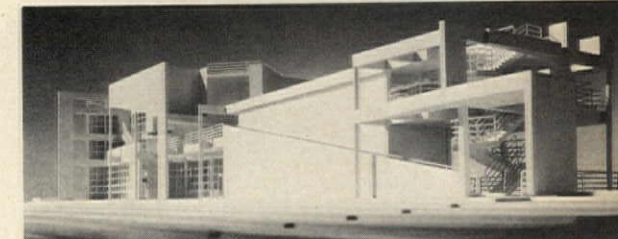


Cornell University Undergraduate Housing, Ithaca, N.Y., 1974.



Museum of Modern Art, Villa Strozzi, Florence, Italy, 1973.

The Atheneum, New Harmony, Indiana, 1975.



Photos: Ezra Stoller C ESTO, except as noted.

Photo: Louis Checkman

English encampments

Barbara Goldstein

Three new towns, The Barbican, Thamesmead, and Milton Keynes, represent three very different contexts of new town planning and development—one, for an inner city site, one on the edge of London, and one, in the rural countryside. The following article compares their planning goals, approaches, achievements.

Since the turn of this century when the Philanthropists built the Garden Cities, and before that when "planned villages" were constructed, the British have had a long history of designed communities. After World War II there was a strong desire to revive this tradition, to rebuild the destroyed parts of cities, to provide people with a higher standard of housing and amenities and to replace the old and decrepit with the new. The New Towns Act was created in 1947: It had become apparent that fewer and fewer inner city sites would provide enough space for the housing and amenities required. Land *outside* major urban areas was sought for new communities.

The Barbican, Thamesmead, and Milton Keynes are all developments growing out from this need. Each was essentially conceived to fulfill London's urgent housing requirements. The Barbican was the first and smallest scheme, located in the financial district of the City of London. Thamesmead was next in size and in time. Located within the Greater London area, on the eastern boundary of Docklands, it was initially planned as an urban community for 60,000 people. Milton Keynes, outside of London's "Green Belt," is the largest and most ambitious of these schemes—a new town designed to serve an eventual population of 200,000.

Perhaps these developments represent the end of an era. The population of England is now stable, the birthrate has dropped, and the official government policy has altered its emphasis, concentrating on restoring the inner cities. In April, it was announced that the projected population of new towns was to be reduced, including that of Milton Keynes, whose original projected population was 250,000. In this light, it is interesting to examine these three developments and see how they have succeeded on their own terms. Their example might yield lessons for similar approaches elsewhere.

Photo: Tim Street-Porter



The Barbican in London: a new town in town.

Author: Barbara Goldstein is an American architect living in London who writes frequently for *RIBA Journal* and other publications.

The Barbican

The Barbican site, in an area formerly known as Cripplegate, provided one of the few inner city sites where major redevelopment could take place. Bombed heavily during the War, the site was virtually vacant, with the exception of a few buildings, which were to be relocated, parts of the ancient Roman Wall, and the historic St. Giles church. The residential population of the area had dropped to 48 from a figure of 14,000 one hundred years previously. In 1954, the City of London Corporation (the local borough) decided to re-create a total community, incorporating homes, and cultural, educational, and commercial facilities.

Architects Chamberlin, Powell & Bon were commissioned to produce a planning study for the area in 1955. They had previously completed Golden Lane, a housing scheme employing pedestrian segregation, on a vacant site adjacent to the Barbican. On the Barbican site, they proposed bridging over and straightening the existing underground and overground railway lines, and creating a noise-free, landscaped pedestrian precinct in the heart of the busy city. Their scheme would incorporate The City of London School for Girls, the Guildhall School of Music and Drama, housing, an Arts Centre, commercial and office facilities. Housing was initially proposed at a density of 300 people per acre, and would be mostly private rental for the middle and upper income brackets, although some publicly rented hostel facilities were included.

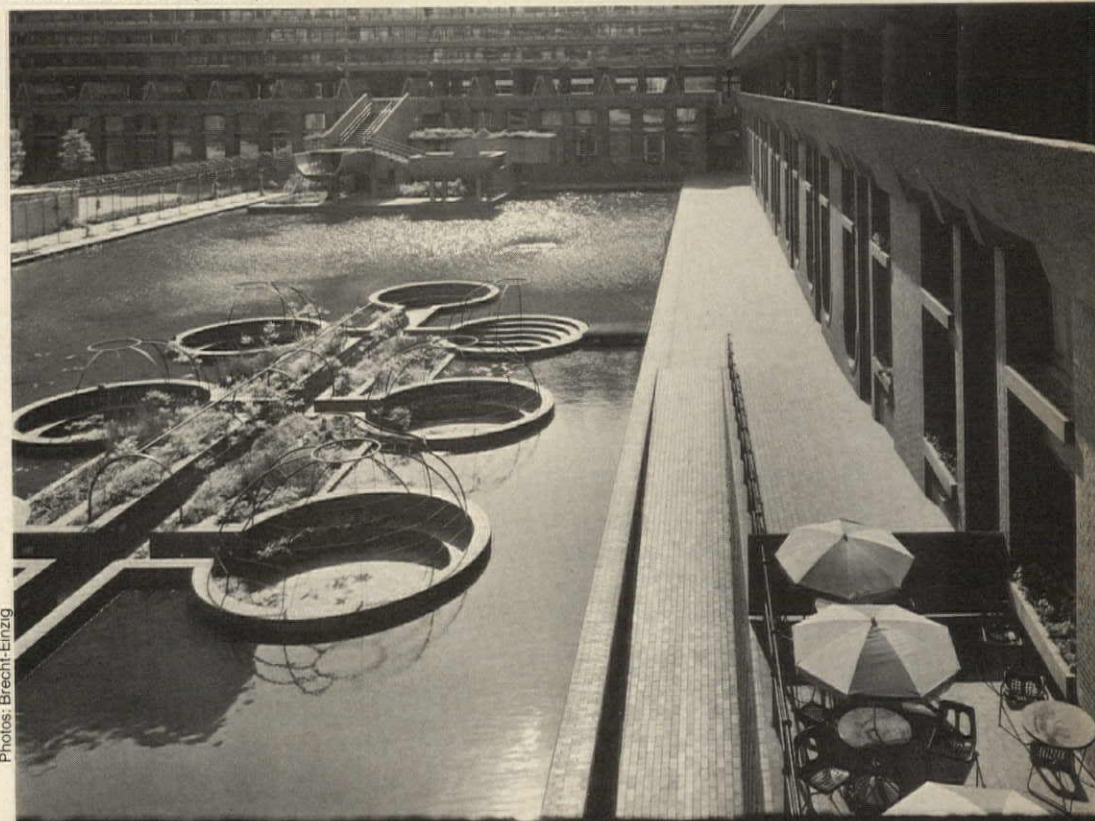
Their plan, revised in 1959 was largely accepted, although without all the retail facilities originally proposed. The density was lowered to its present level of 230 people per acre. Currently 6500 people are living on the 35-acre site. The Barbican's residential development is now virtually complete. The Guildhall School of Music and Drama opened in May, and the Arts Centre and crescent of apartments surrounding it are due for completion at the end of 1979. The scheme was financed by the City of London Corporation, which will regain its investment by the rental of housing and commercial and office facilities.

The Barbican design

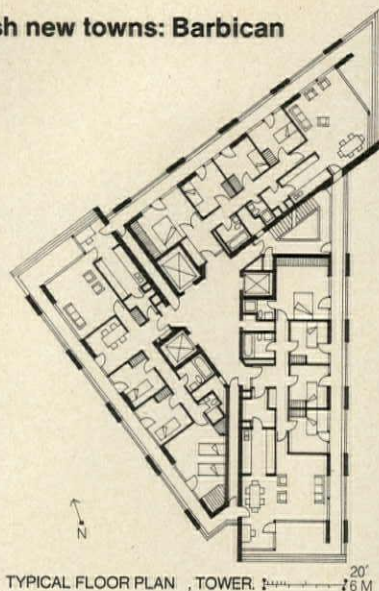
By decking over the street and creating a pedestrian 'podium' on several levels the architects almost doubled the original area of the site, creating 23 acres of landscaped open space. They built a combination of tower blocks, linear "terrace" blocks, and mews houses, all overlooking and spanning lakes and grassed, landscaped squares. The materials they chose—deep-pointed tooled-finished concrete, bush-hammered concrete with crushed granite aggregate, and purple colored brick, have weathered well. They are highly sympathetic to the historic ruins on the site as well. The City of London School for Girls echoes St. Giles church's medieval qualities and blends in beautifully with



Pedestrian piazza surrounds St. Giles' church several levels below the podium and the street level (above); mews apartments overlook water garden (below).



English new towns: Barbican



TYPICAL FLOOR PLAN, TOWER. 1:20' 1:6 M



Photos: Tim Street-Porter



Typical plan of one tower (top); for other two towers (below) plan is turned.

the church courtyard. Reflecting pools, trees, and fountains add to the protective tranquil and spatial qualities created on the relatively small site.

The triangular tower blocks are designed with three large flats around a lift lobby on each level. The triangular plan permits each flat to have a maximum amount of day-light and splendid views. The linear "terrace" blocks are elevated above the podium level and are accessible by a series of lifts servicing two flats on each floor. These flats are long and narrow with windows and balconies on each end. The end flats have windows on three sides. Below podium level are the mews houses accessible by car from their own ground level or by foot from the podium above.

These houses have direct access at ground level to the lakes and squares, although the continuous, free ground area actually occurs at podium level above, which links directly to the street.

The Arts Centre is almost entirely beneath podium level with the exception of its fly tower. It will be directly accessible from ground level, podium level, and from an underground car park. A large foyer, built as a conservatory with a glass roof, will serve the theater, concert hall, lending library, and cinema. Two restaurants and a cafeteria open directly onto the foyer.

The facilities in the Arts Centre are lavish by any standards. The theater, which seats 1250, will be the new home of the Royal Shakespeare Company. The 2000-seat concert hall will be the home base for the London Symphony Orchestra, and will double as a conference facility. The Guildhall School of Music and Drama forms one side of the massive Arts Centre. The school will have direct links through to the Royal Shakespeare Theatre, encouraging the sharing of facilities and sets.

At the southwest corner, adjacent to the main Barbican site, is the new Museum of London, designed by Powell, Moya & Partners. The museum links to The Barbican's pedestrian walkway system via a dramatic glass-roofed concourse. It is arranged around two courtyards, one opening to the north and the old Ironmongers Hall, the other enclosing a garden. At the southern edge, the museum spans a fortresslike roundabout called the Rotunda, located at the end of the Roman wall. These can both be viewed from the museum galleries.

Successful plan

Much of the Barbican's success is due to the fact that the project, from start to finish, has been the responsibility of one (very good) architectural team. Their plans have proceeded, with little basic alteration, from the beginning of the project to the present. Their obvious care in the choice of materials and landscape design has made it a pleasant place to live or work in. It is, in one sense, a "set piece," but it is precisely from this fact, and its unity of in-

tent, that it achieves its drama. It is very unlikely that England will ever again build such a coherent, truly urban development.

The criticisms most often voiced about The Barbican focus about the windswept and often empty podium. Indeed, it is difficult for a pedestrian to find his way into the development from the ordinary street level. It remains to be seen if these problems will diminish with time. As many of The Barbican residents use their dwellings as city *pied-à-terres*, the site is not very busy during the weekends. Because many of the trees planted on the site are not yet mature, there is a degree of barrenness. However, the situation is changing rapidly with the opening of the Guildhall School of Music and Drama and the Museum of London. Once the Arts Centre is complete, the increased activity on the entire site should make it a very vibrant community.

Data

Project: The Barbican Development, City of London, England.

Architects: Chamberlin, Powell & Bon.

Site: 35-acre site in the northern part of London damaged during the war. Remaining were St. Giles' Church and sections of old Roman Wall plus some buildings on periphery.

Program: mixed-use residential development; 2113 flats, maisonettes, and terrace houses for up to 6500 residents, middle and upper income; 200-room hostel for students; girls' school, theater (1250 seats), library, art gallery, concert hall (2000 seats) and cinema (400 seats), with shops, restaurants, elevated pedestrian walkways, parking for 2500 cars below podium.

Structural system: poured-in-place concrete throughout with exposed surfaces pick-hammered and bush-hammered for finish. The towers, 40 stories high, have central elevator shaft with framework of beams and split piers rising from exposed columns.

Major materials: concrete, brick, glass.

Consultants: Ove Arup & Partners, structural; G.H. Buckle & Partners; mechanical, electrical; Davis, Belfield & Everest, quantity surveyors; Theater Projects Ltd., theater engineers; Hugh Creighton, acoustical.

Client: The City of London Corporation.

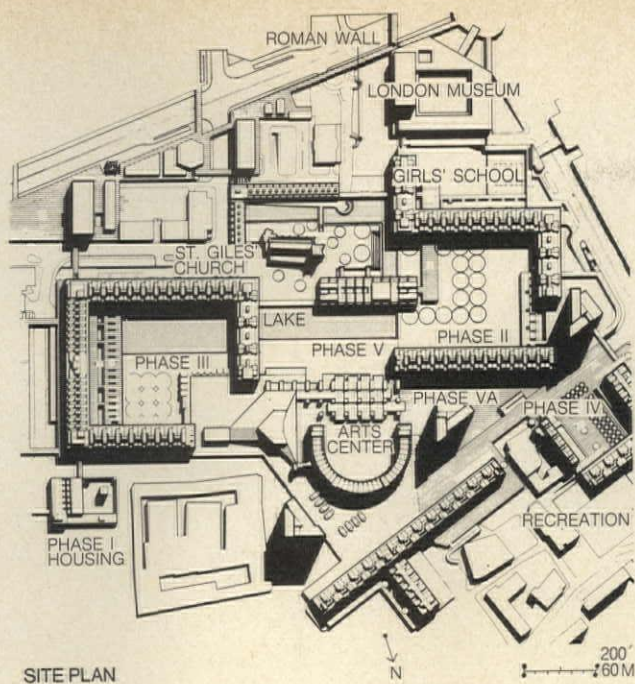
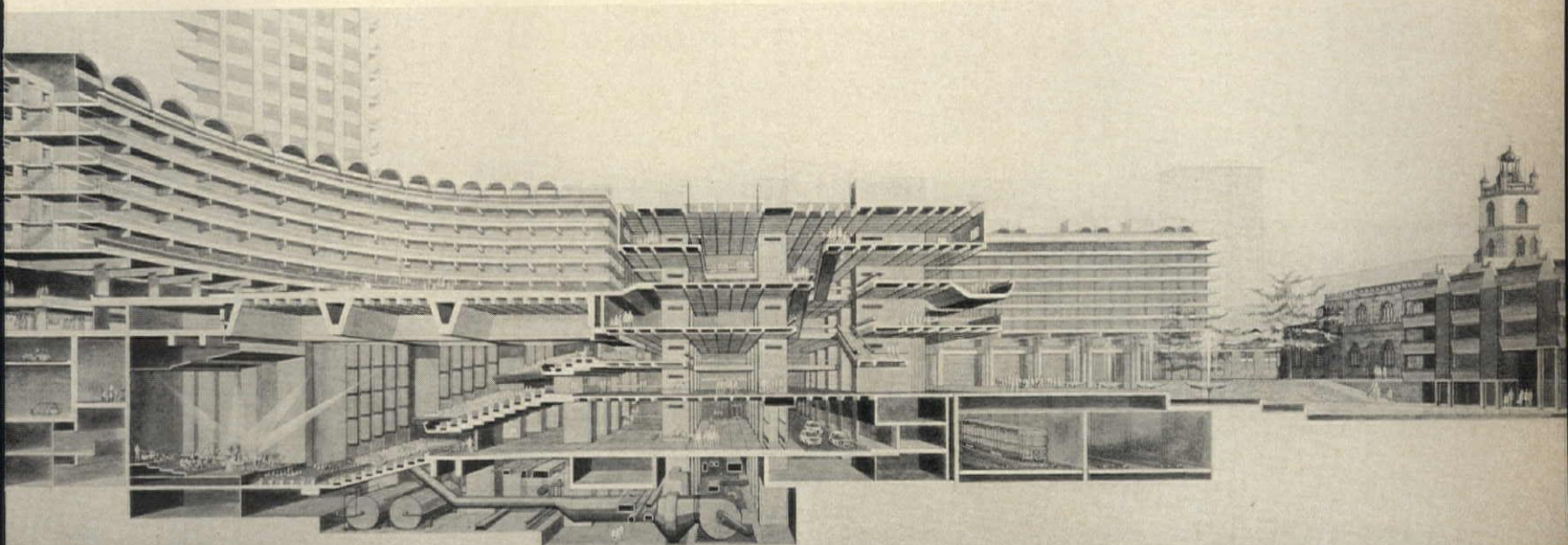


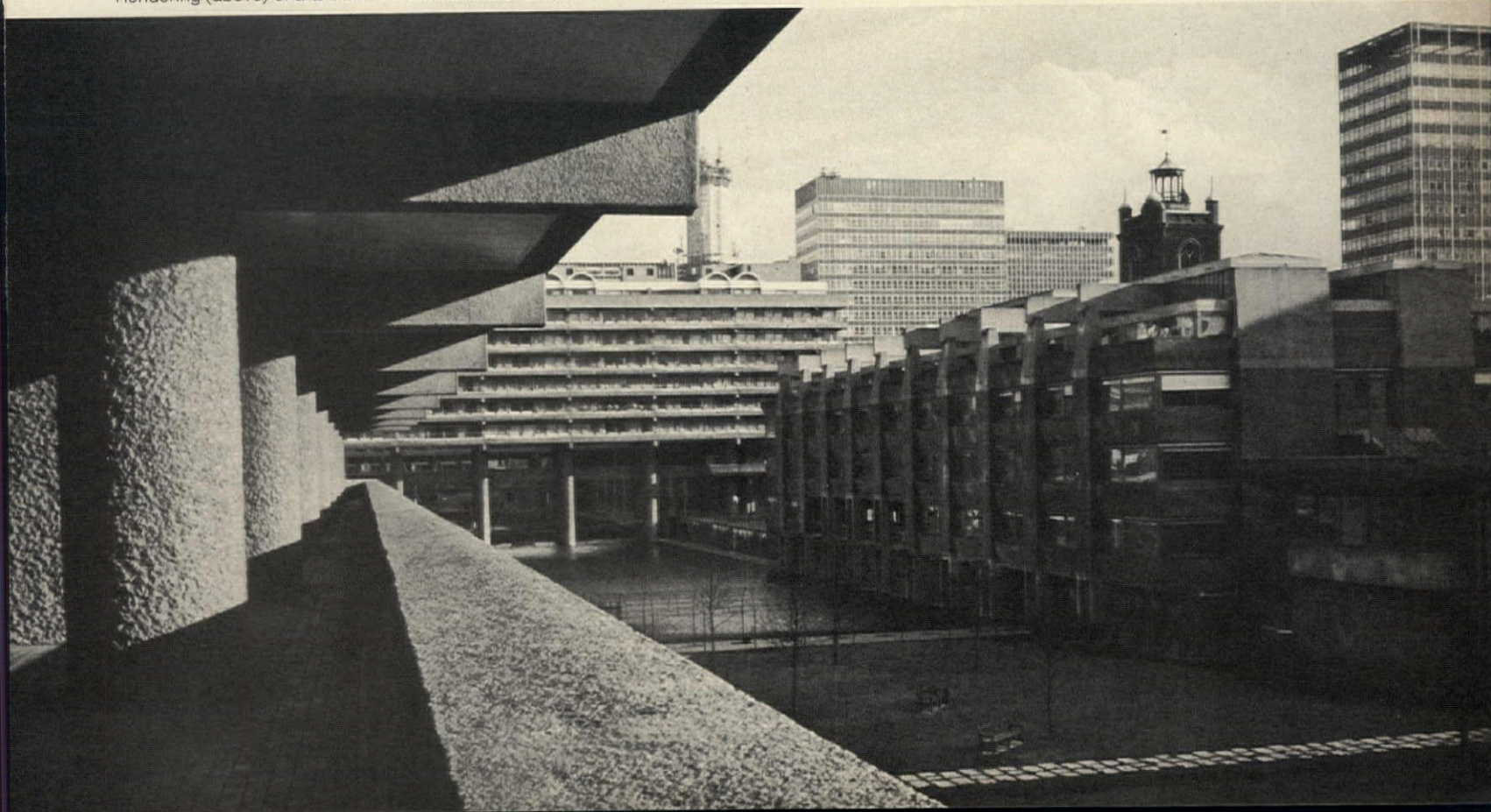
Photo: Brecht-Einzig

Steps for sitting at edge of water garden lead to church piazza.

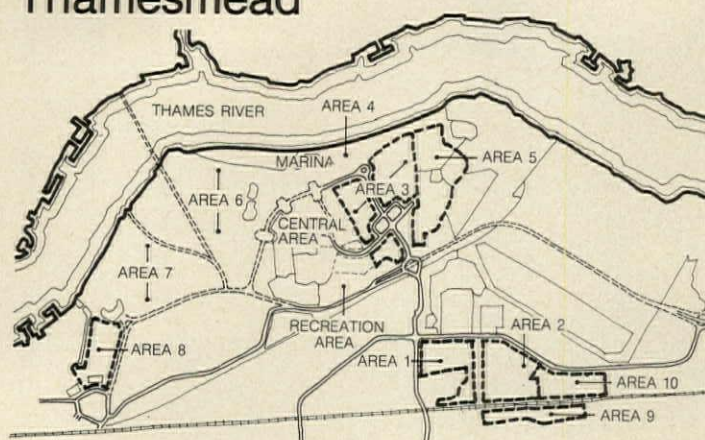


Rendering (above) of arts center under construction; podium level (below) links to street.

Photo: Suzanne Stephens



Thamesmead



SITE PLAN



Lakeside housing Area I

Like The Barbican, Thamesmead was an attempt to create a multi-level, high-density urban community, employing types of pedestrian segregation. It was originally intended to be a self-contained industrial and residential community on the periphery of Greater London. Located on the eastern edge of Docklands, on the south bank of the Thames, the 1600-acre site was assembled from land belonging to a sewage works and the old Woolwich Arsenal. Even though the site is flat and marshy, because of its size, availability, and three miles of river frontage, the London County Council felt that it would provide the ideal location for a new community. The Greater London Council are the architects and planners for this scheme.

The original intentions of the plan in 1965, were to create a new mixed-income urban community at a density of up to 100 people per acre, with a job available for every resident (to prevent overloading the already crowded rail links into Central London). The planners and architects provided bus routes within a quarter mile of every home, complete pedestrian/traffic segregation linking to a main town center and ten local ones. Canals and balancing lakes were designed as amenities as well as for drainage, and as many homes as possible were given views of the river. The scheme was jointly funded by the London County Council (now the Greater London Council) and the two boroughs which the Thamesmead site crosses. Thamesmead began building according to plan, but has since been beset by many problems.

Swampy site

The low-lying site of Thamesmead is subject to occasional flooding. At the time building started, a local bylaw required that no residence have habitable rooms at ground-floor level. In order to *begin* construction extensive land reclamation and drainage schemes needed to be carried out. Roads were laid, trees planted, balancing lakes dug, and the land excavated to form lakes was used to mold the flat landscape. Since buildings had to be placed on 25-ft-deep piles, with habitable

rooms above ground level, the perfect rationale was offered for creating pedestrian decks at the first-floor level.

Two main elements that could have attracted industry to the area were the proposed north-south 'ringway' intersecting the site, and a tunnel extending from Thamesmead to the north bank of the river. The nearest river crossing to Thamesmead is the slow, inadequate Woolwich free ferry several miles from the center of Thamesmead. Since there is a shortage of labor on the north bank of the Thames, the tunnel could have provided jobs for Thamesmead residents close to home.

Unfortunately the ringway has been indefinitely postponed, and the tunnel, while still planned, will not be constructed until the 1990s. As a result of these factors, and others, few industries have actually settled in Thamesmead and most residents still commute into Central London or to Kent.

The first three areas of Thamesmead, however, show the intent of the original master plan. Parts of these areas were built using the Balency system of concrete fabrication, with a factory erected for this purpose in the industrial zone.

The first area of the project is very dramatic. A linear spine intended to be a unifying and orienting link throughout the scheme backs onto the road, providing a noise barrier for the housing it contains. Pedestrians may move on decks along the spine to a 'yacht harbor' surrounded by tower blocks. The spine also links up to terraced housing with vehicular cul-de-sacs and pedestrian courts at ground level. In Area I there is a local center containing shops, a pub, a health center, and a police station. Serving different functions at different levels, this part of the scheme—entirely systems-built—looks very urban. It was a very bold statement for its time and echoes some of the spirit so well expressed by The Barbican.

Snags in execution

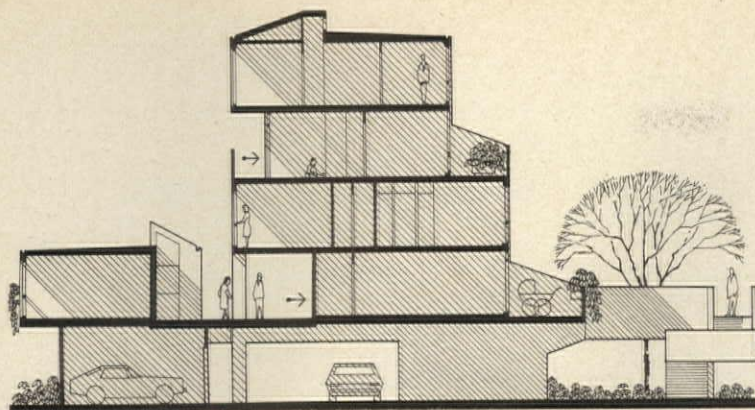
However, problems soon beset the scheme, few the architects' or planners' fault. The introduction of the government's "housing cost yardstick" for public hous-

ing made the Balency system uneconomical. Opposition from the two adjacent towns of Woolwich and Erith to a large shopping center reduced the projected size of the center to 200,000 sq ft, to be built in two stages (when the population reaches 22,500). Car ownership was less than originally predicted, leaving many car bays empty. Since residents must rent car bays, many prefer to park their cars on access roads. The absence of local employment leaves Thamesmead rather deserted in the daytime. Meanwhile the reversal of the requirement to place habitable rooms above ground floor level has led to the reduction and finally the elimination of decks entirely. Even in Stages I to III, the decks do not operate on a continuous level and it is often necessary to climb stairs or ramps to reach deck level.

One of the ideas behind Thamesmead was to attain a mixed community with 35 percent of the residences sold for private occupation. It soon became apparent that at densities of 100 people per acre it would be difficult to sell the dwellings. The densities for sale areas had to be lowered, meaning that there would be fewer sale houses, more land swallowed up, or both. At present, there is little sale housing proceeding and the construction of some of this has been taken over by the council rather than by private developers. The idea of producing a mixed community at an urban density has therefore been dissipated.

With the introduction of the housing cost yardstick, systems building gave way to a mixture of systems and brick, then to all-brick housing, taking on the same basic linear forms. The latest plans for the northern sections of Thamesmead, while respecting the linear structure, show houses in the "new English vernacular"—brick walls and pitched roofs—low-rise, some terraced houses, and some detached.

The scheme now houses 13,500 people. It is possible that it will reach its (reduced) population goal of 48,000 and that the tunnel and riverside park will go ahead. So far, the plans to create a river walk look very distant, and it does not seem likely that Thamesmead will be completed in the



SECTION, LINEAR BLOCK HOUSING

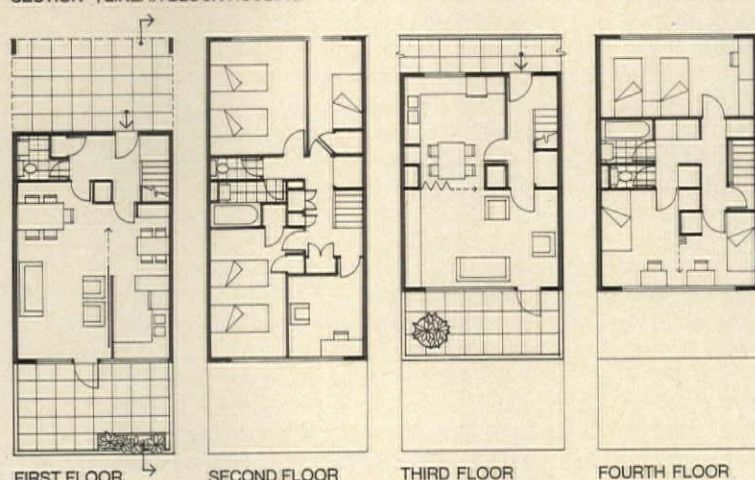
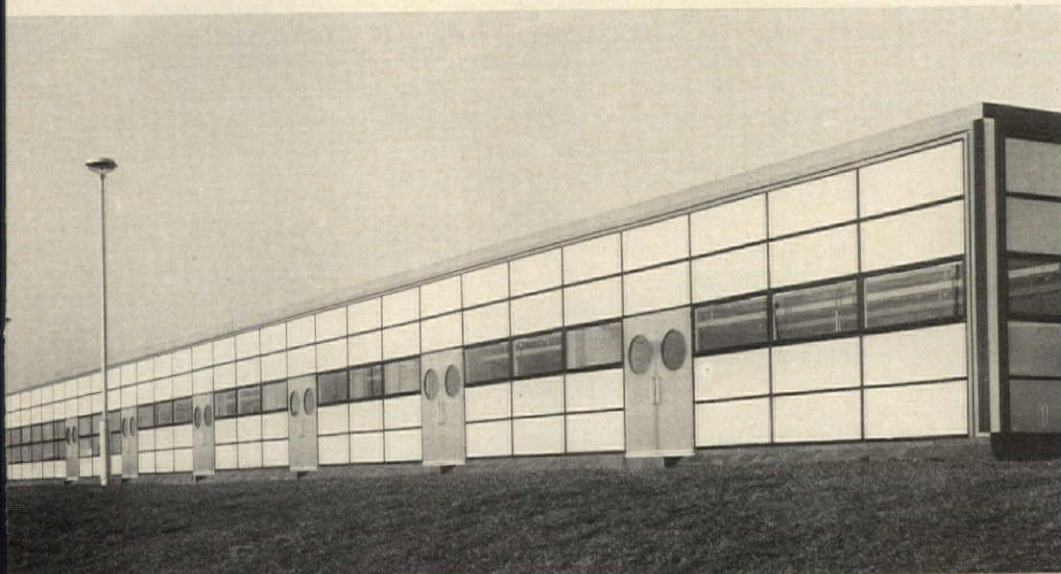


Photo: Tim Street-Porter

Area I housing uses industrialized building system.



GLC-designed "high-tech" Waterfield school, (above); communal space for family housing (below).



planned-for 15 years. It is certain that Thamesmead will never be the mixed income, living, and working urban community that was originally conceived. It is a pity the optimism and good intentions that spawned it have been squelched by changes in political and economic climates. Although the scheme has been forced to take a re-trenched position, it was not really designed for this type of flexibility, and the slow change from one form of architecture to another has not been eased by the overall plan of its roads and landscape.

Data

Project: Thamesmead, England.

Architects: Greater London Council Department of Architecture and Civic Design; Architect to the Council and Controller of Construction, Sir Roger Walters; Special works architect and Thamesmead manager; Geoffrey Horsfall; divisional architect, Thamesmead division, Eric Hayes.

Site: a 3.5-mile stretch, 1600 acres of marshy hinterland on south side of Thames just outside London.

Program: New town for 60,000 (originally, now reduced to 45,000-48,000) in low-rise and high-rise (13-story) units for sale or rent to moderate income households; support facilities included, such as local shopping center, schools.

Structural system: concrete industrialized building system (Balency) for towers, linear blocks and low-rise housing; recent housing uses traditional masonry construction.

Consultants: R.P. Manning-Coe, civil engineers; E.W. Bunn, structural, H.S. Page, quantity surveyors.

Client: City of London.

Photo: Tim Street-Porter

English new towns

Milton Keynes

The idea of building a new town in the area now known as Milton Keynes was first conceived in the early 1960s as a means of relieving the pressure of London's growth affecting southern Buckinghamshire. By 1967, after the publication of the South East Study (1964) and much discussion with government, Milton Keynes was designated as a new town. Building began in 1971.

The costs of Milton Keynes are shared by the Milton Keynes Development Corporation, local and public authorities, and private development. The Development Corporation has powers to acquire, hold, and manage the development of land, provide services, and make other expenditures. The public sector is responsible for the infrastructure, although the Development Corporation pays for it if installed earlier than originally planned. The private sector is involved in housing, commercial and industrial development. Housing can be developed privately or by the Corporation and sold outright. Industrial sites are leased from the Corporation which buildings can either be owned by the various industries or leased to them. The same rule applies to commercial development. About one-third of the cost of Milton Keynes will be borne by the private sector.

Background town

Milton Keynes is called a "new city," but it might be more accurately described as a "new suburb." Spreading along in a leisurely way across 22,000 acres of former farmland, punctuated by balancing lakes and a canal, the distinguishing characteristics of the community are (or will be) its densely wooded roadways and low-rise development.

The eventual population of 200,000 are housed in medium-density communities, each with their own shops, schools, and community facilities. Not only do three existing towns on the periphery of the "city" provide additional retail services, but the new Milton Keynes city center will act as a huge regional shopping mall offering, in addition, entertainment, office, and recreational facilities. While Milton Keynes will take much the same form as many of the natural suburbs surrounding large American cities, it is independent of any large nearby metropolis and is structured as a self-contained community in its own right.

The Master Plan, as conceived in 1967 by Llewelyn-Davies, Weeks, Forester-Walker & Bor, proposed a highly flexible set of guidelines, based around transportation networks, topography, landscape, and existing development on the site. Rather than creating a city in a form-making sense, they proposed a framework within which the city could grow naturally. Since landscape was an important consideration, earthwork, roads, and the planting of thousands of trees were parts of the early development.

Like the Llewelyn-Davies team's recent plan for Shahestan Pahlavi in Tehran, Milton Keynes is based on a grid, woven into an existing fabric and reinforced along one

axis with a linear park. At Milton Keynes this park, part of a large network of other parks and open spaces, creates a constant reference point in the city. The distorted grid road pattern is based on the existing road, rail, and canal networks, joining together the towns of Bletchley and Wolverton and providing, in individual grid squares, the location for housing.

Each grid square housing area is to contain a combination of different house types, in small contiguous estates, plus a community hall, shops, a pub, and at least one school. The houses include public authority rental homes and privately owned homes. The mixed-income estates, some of which are nearing completion in the central area, and elsewhere, will be woven together by open spaces and footpaths.

Originally community facilities for each grid square were intended to be located along the roads, encouraging links between the different squares along the transportation network. Unfortunately, this idea has not been consistently carried out, so some squares are more inward-looking than others.

Certain grid squares contain industrial estates, in conformance with stated intentions of the Master Plan to create a community where people both live and work. The policy has been very successful, and has avoided Thamesmead's pitfall of becoming a commuter suburb (although transport links to the city of London are excellent). A large number of industries have relocated or expanded facilities in Milton Keynes and the city itself has generated much employment in service and construction industries.

Housing

Public authority houses have "fair rents," based on their size, amenity level, and the percentage of building loan interest the Development Corporation must repay the government. The fair rents are very reasonable—a four bedroom house may be rented for somewhere in the region of \$100 per month—less than half of what the mortgage repayments might be on a similar type sale house. If a family in a public authority house cannot afford the "fair rent" it may be eligible for a rent subsidy from the council.

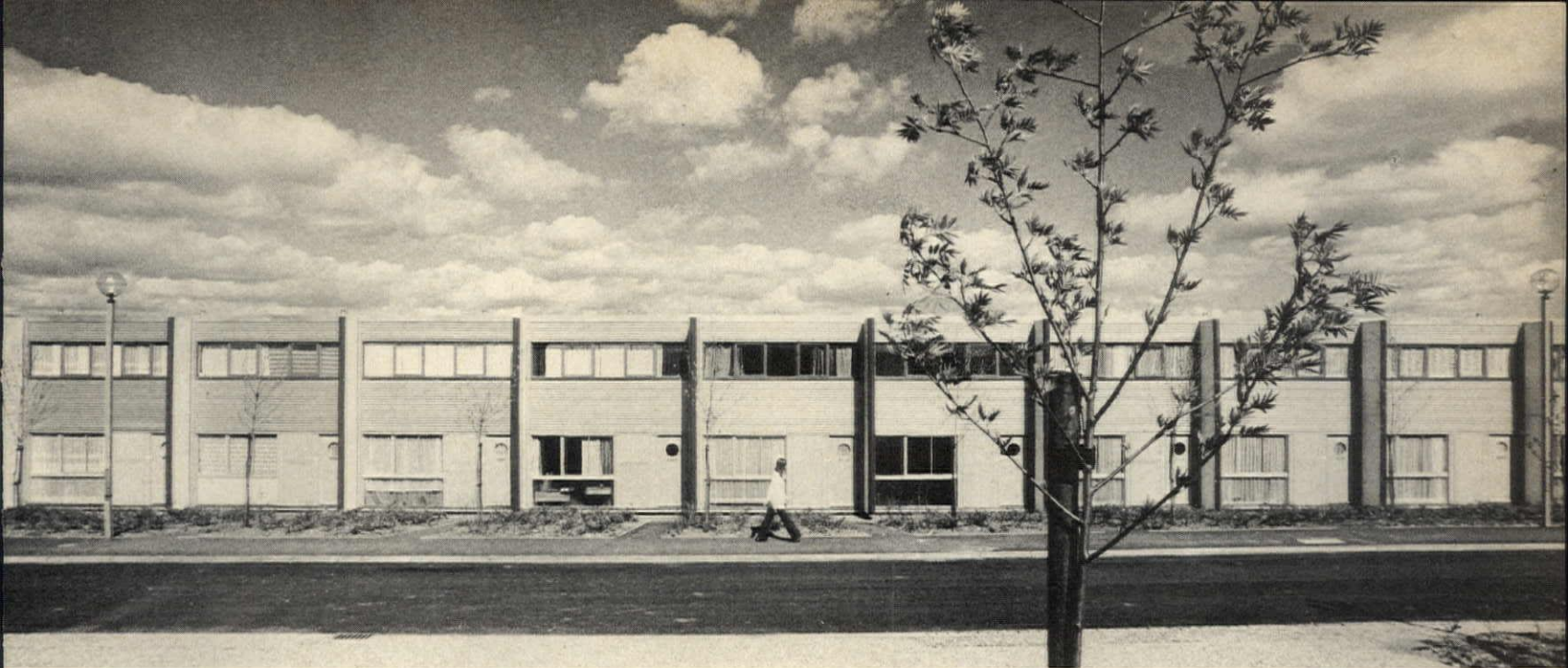
The variety of architecture in Milton Keynes' housing offers its prospective residents a large range of choice. Under the early direction of Derek Walker, (who last year resigned as Chief Architect and Planner of Milton Keynes to go into private practice) a large variety of different house types and construction techniques was encouraged, designed both by MKDC and private architects commissioned to carry out particular projects. Housing comes in systems-built form or traditionally built, with "high-tech" aluminum-clad housing by Foster Associates in Bean Hill or MKDC "high-tech" housing at Netherfield. Ralph Erskine has designed a brick and weatherboard "village" housing scheme at Eaglestone while Martin Richardson is just completing a vernacular-style brick



Housing at Great Linford by Martin Richardson.



Photo: Tim Street-Porter



Netherfield housing (above) designed by Milton Keynes Development Corporation's in-house architects; Eagleston housing (below) by Ralph Erskine.



Photo: Tim Street-Porter

scheme at Great Linford that ties well to an existing village on the edge of the site.

The schools in Milton Keynes have all been designed by the architects of Buckinghamshire County Council. The style, as generated by their former Chief Architect, Fred Pooley, is also vernacular, so that children should be able to identify schools with their home environments. As a result, the schools look like groups of houses, sited around courtyards, an interesting contrast to the recently completed "high-

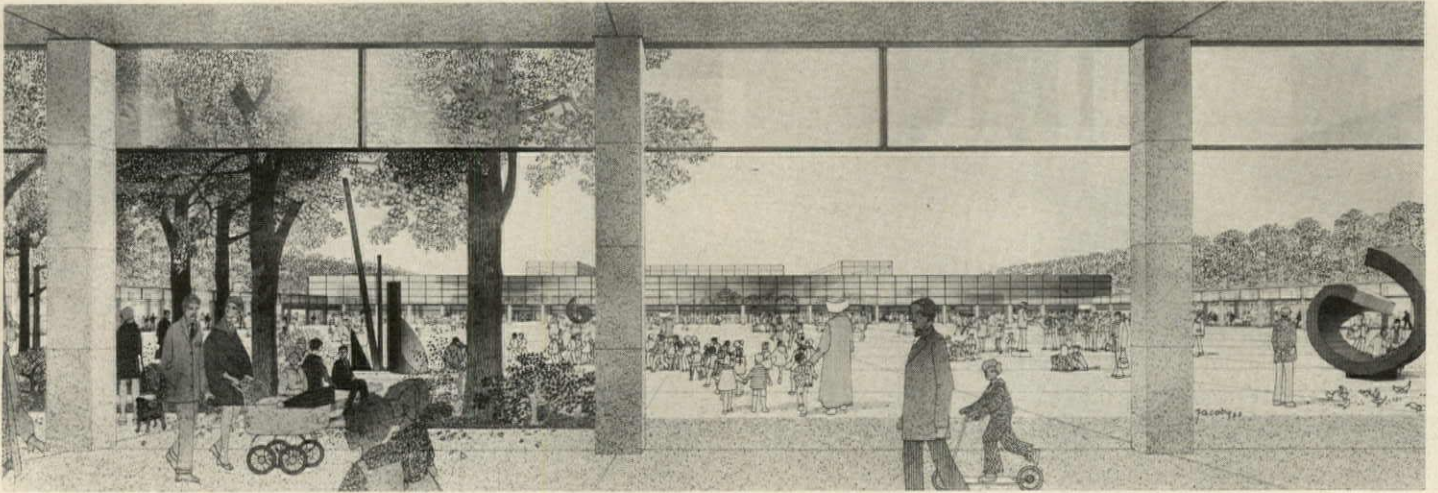
tech" Waterfield School in Thamesmead.

Other types of design innovation have also been encouraged at Milton Keynes. The Bletchley Leisure Centre is crowned by a gray, honeycombed plastic pyramid that roofs a palm-tree-embellished pool. Bletchley also sports a covered market made from a cluster of rigid white fiberglass umbrellas. Many of the factories in Milton Keynes are Advanced Factory Units—plastic-coated steel-skinned flexible sheds that permit windows, doors,

and partitions to be inserted where needed.

In the meantime, efforts are being made to preserve and restore the existing fabric of historic towns and buildings on the site. In grid squares like Linford, including existing villages, great care is being taken to integrate old with new by the use of landscape and footpaths. As planned, the towns of Bletchley, Stony Stratford, and Wolverton are being developed to provide more services for the burgeoning popu-

English new towns: Milton Keynes



Perspective rendering of shopping center of Central Milton Keynes now in construction (above), aerial perspective of entire center (below).

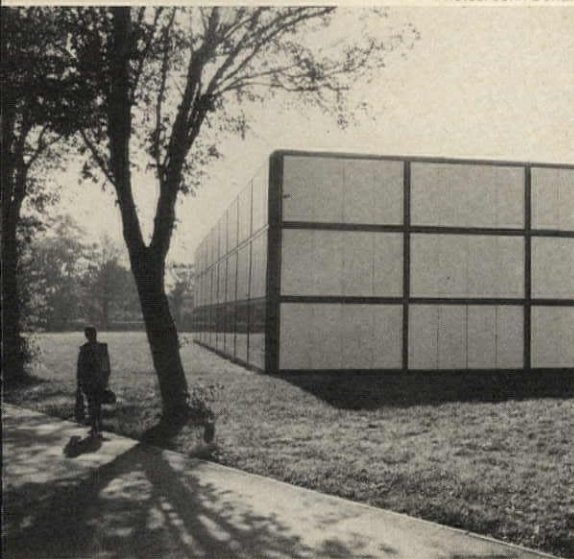


Photos: Tim Street-Porter

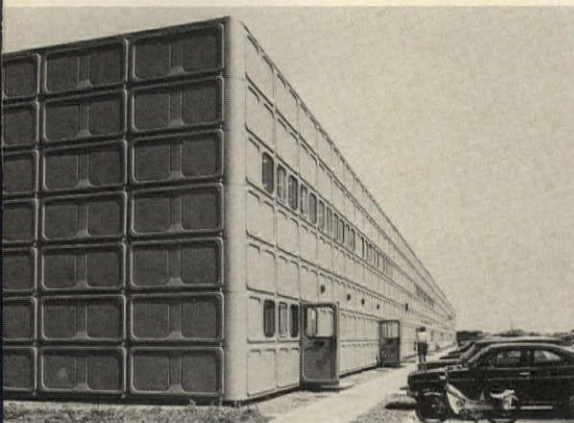


Lloyd's Court, an office complex in central Milton Keynes designed by MKDC (photos above showing outside and interior court); Coffridge Close shopping center, Stony Stratford (right).





Wavendon visitor's center.



Factory units at Kiln Farm.



Bean Hill by Foster Assoc.
Fishermead housing, MKDC.



lation of Milton Keynes. For example, the Brunel Shopping Centre opened several months ago in Bletchley and contains a large supermarket and a number of other large shops located on an enclosed mall. Stony Stratford, a more traditional English town with a charming "high street" lined with little shops, has a new shopping area, Coffridge Close, which was built along the high street as an infill scheme. Its three-story brick colonnade with shops on the street frontage is broken by a passage leading to a group of shops and offices nestling around a landscaped area behind. In Wolverton, a very traditional railroad town on the northern edge of the city, building has begun on an "agora" which will be a multi-purpose community space for concerts, sporting events, and other types of large group activities.

In central Milton Keynes a major city center is now in construction. Lloyds Court, a large office block planned on a figure-eight shape surrounding two internal courtyards, has recently been completed. Across from Lloyds Court, the first phase of a central shopping area will be completed this year. The center will accommodate several department stores and a large variety of shops, much like an American regional shopping mall. The center will also have many courtyards landscaped with boulevards of trees. Other central area facilities, including those for recreation and entertainment, will be built over time. Housing around the central area will be denser than that in some of the outlying areas, in order to support and emphasize the city center.

Any city of this size to be built in a time span of at least 25 years is bound to present problems for its "pioneers." The present population of Milton Keynes, including the existing towns and villages, is around 80,000. Residential construction is proceeding at a rate of approximately 3500 dwellings per year. However, since automation is replacing unskilled workers, in industry there, more homes are rented or sold to skilled and semi-skilled workers than unskilled. This means a lower number of unskilled workers live in Milton Keynes than planned, and there is less mobility for the unskilled who do settle there. This may alter the prospect of attaining a broad social mix. However, industries are still locating in Milton Keynes and the recruitment campaign continues.

Transportation

The grid road system, planned before people were aware of the gravity of the energy crisis, presumed at least one car per dwelling. This prediction was not met, so the roads, which were planned as the city's lifeblood, can become obstacles for those without cars. There are local and county buses and an experimental dial-a-bus system in some areas of the city. Nevertheless, a major shopping trip outside the grid square for a mother with two small children becomes a major journey.

The transportation problem can lead to the isolation of nonworking mothers in Mil-

ton Keynes. The problem is less acute for those men and women who work and either drive the family car or are collected from home by an industry-operated bus.

Attempts are being made to prevent isolation in Milton Keynes. There is a strong social services network, mothers are encouraged to set up play groups in community halls, and industry is being pressured to employ women at least part-time.

Community spirit is in fact blossoming in Milton Keynes, a bond among pioneer neighbors in a growing city.

Conclusion

There has been a strong tendency among English architects to criticize all of these ambitious schemes on architectural grounds, even before they have been completed. These criticisms are, of course, relevant to a certain extent. However, what would be more desirable than feedback on a portion of any of these schemes is feed-forward—an ability to see what the experience of living in them will be like in 30 years' time.

Judged on their own terms of reference, The Barbican and Milton Keynes succeed better than Thamesmead. The Barbican was fortunate—it was of manageable size, was designed by one team of architects and, more importantly, was mostly built during a boom in the economic climate. Thamesmead, because it had some of the same form-making goals as The Barbican but was under the greater political pressure of three different public authorities and a faltering economy, has not fared well.

Milton Keynes is very difficult to evaluate so early on. Driving through it unescorted by a resident, architect, or planner, it is difficult to imagine its form. It is also a difficult place for its pioneers to live—a perpetual building site in which they must tolerate much discomfort. It would have been desirable for better transportation and more amenities to have been there the day before yesterday. However, there is room for change in its flexible plan, and a great deal of good will in its creation. □

Data

Project: Milton Keynes, England.

Architects: Llewelyn-Davies, Weeks, Forester-Walker & Bor, master plan. Milton Keynes Development Group, Department of Architecture and Planning.

Site: 22,000 acres formerly farmland near existing towns of Bletchley, Wolverton, and Stony Stratford, about an hour and a half drive north of London.

Program: self-sufficient new town with target population of 200,000 (currently 70,000), to be housed in low-rise medium-density neighborhoods, with own shops, schools, etc. plus a central office-entertainment-shopping complex. Housing both sale and rental, publicly and privately financed.

Consultants: Nathaniel Lichfield and Associates, economic; Peat Marwick Kates & Co., transportation; Peter Youngman, landscape.

Client: Milton Keynes Development Corporation and Minister of Housing and local government.

Monochromatic contextualism

C. Ray Smith

For a new theater building in Canada, architects Barton Myers and R. L. Wilkin have turned two major urban amenities into positive esthetic factors.

It is a long way from the barn red of summer theaters to the rust color lacquer of Edmonton, Alberta's Citadel Theatre. And it is a similar distance from the Citadel Theatre company's first home—in a former Salvation Army "citadel" of charity and worship—to the \$6.3 million civic monument that is the resident performing troupe's new playhouse.

Designed by architects Barton Myers and R.L. Wilkin (formerly Diamond, Myers & Wilkin, Associated Architects) and by theater consultants Andis Celms and Phillip Silver, the Citadel Theatre is a notable drama facility in which all the basic functional decisions have been correctly made—so far as has been revealed. It is also notable aesthetically for its monochromatic use of color in a building with exposed, expressed structural and mechanical elements.

Opened last November, the Citadel contains three separate theaters to accommodate the flexibility required by the performing company. As the architects say, "A key decision by the client was to avoid trying to achieve flexibility within one theater space." The first of the three theaters is the principal, 685-seat, single-form, proscenium stage facility, which has a deep forestage and continental seating without cross aisles. No seat in the 19-row auditorium is farther than 65 ft from the stage (still the maximum acceptable distance for good viewing of live drama).

The second theater is a 147- to 208-seat, nonmechanized, multiform, experimental "black box" studio theater; it has a second level on the perimeter that can alternate as performance or audience area. The third is a 270-seat cinema and lecture hall.

Backstage facilities—shops as well as offices, dressing rooms, and rehearsal spaces—have a front-of-house spaciousness (some of them have a front-of-house elegance of finish) and in many cases are open to natural daylight. Also in the single-building complex are a restaurant, bookshop,

classrooms, and a greenhouse-like lobby that gives the Citadel a kind of front porch facing the city.

The combination of these facilities and amenities puts the Citadel Theatre forward as a solid candidate for an Ideal Theater award of the year, and certainly makes it a model for other architects who design similar facilities.

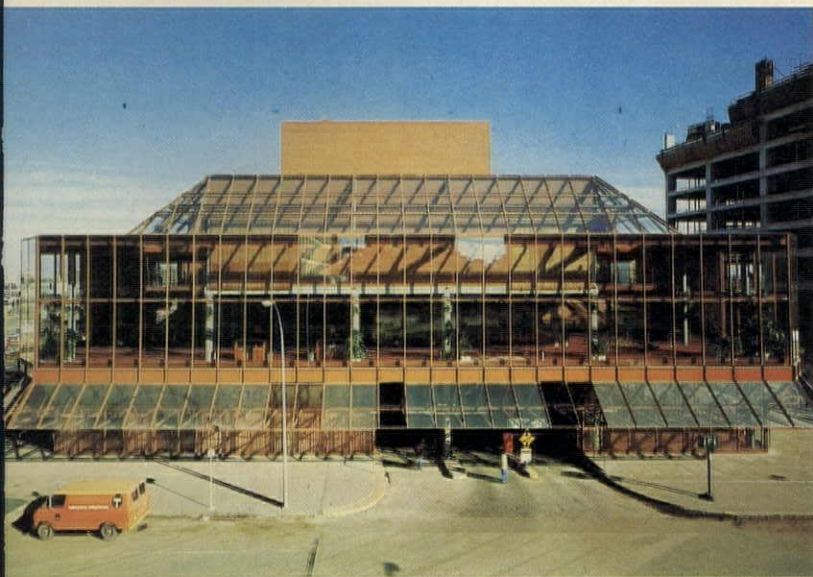
The theater is also a model of real estate and funding negotiations. Spearheaded by Joseph Shocter, an indefatigable Edmonton lawyer who has been the prime mover and executive producer of the theater company, the fund-raising program tapped seemingly every available public re-



Mall, entered at sides, connects front of house to back (detail below).



Author: C. Ray Smith, AIA, is author of *Supermannerism: New Attitudes in Post-Modern Architecture*.



source. The land—a 90,000-sq-ft site one block off Churchill Square, the civic center of the City—has an estimated value of \$3 million and is leased to the theater by the City of Edmonton at \$1 per year for 50 years. The cost of the building and the land together are estimated at approximately \$9 million.

Funding for the building was raised from the federal government, the provincial government, the municipal government, and from corporate and private donations. The theater has an operating budget of \$1.2 million—financed by the same sources that funded construction as well as by a subscription audience of 14,500 and by rentals to other

A monochromatic rust-color scheme throughout the Citadel is monumental. Besides rust orange Medicine Hat brick, also rust tones are the duct work, soffits, furnishings, and the steel framing of the lobby and the sidewalk canopy, where some glass panes are still to be installed.



Citadel Theatre

arts organizations.

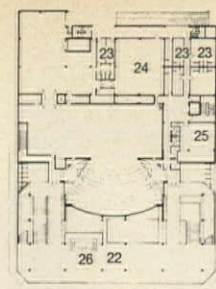
The architects were selected as winners of an invited competition in which their design was recognized for its practical, poetic, and perhaps even metaphorical responsiveness to the downtown site. There is an existing underground parking garage at the west side of the site, where an entry is visible. Besides this condition, city planners had established a 30-foot-wide pedestrian right-of-way bisecting the site from north to south. The architects' approach has been, in the words of Barton Myers and project architect Donald Clinton, "to turn these apparent disadvantages into positive design factors."

The theater scheme emphasizes these urban conditions in its section: The rake of the audience seating, which is exposed as a dramatically sculpted concrete work on its underneath side as the ceiling of the lobby, "parallels" the garage ramp. It also reflects the fact that the auditorium had to be raised 18 ft to accommodate the ground-level pedestrian right of way. But the location of the audience rake immediately above the garage ramp produces a metaphorical section: It is as if driving into the theater garage might parallel the driving attention of the audience toward the stage action.

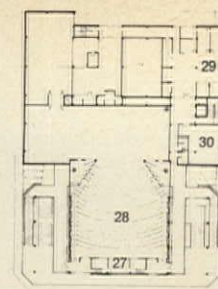
The ground-level pedestrian way that runs through the middle of the building will connect the forthcoming construction on each side of the theater and be part of a continuous pedestrian mall from Churchill Square to the North Saskatchewan River Valley. This kind of enclosed circulation has been an interest of the architects from the time of York Square (P/A, Sept. 1969, p. 144) to the student housing at the University of Alberta at Edmonton (P/A, Feb. 1974, p. 46). But here not only has the city gained an enclosed mall; the theater has gained an extra, on-grade public lobby area—a spine around which all the public activities of the Citadel are organized.

On the exterior also, the Citadel is bisected by this mall-spine: It symbolically divides front-of-house from back-of-house. The eastern half containing the stage tower of the main theater is a brick box. The western half, which is the front of the main theater house, is visually a glass-and-metal greenhouse. Critics may well question the use of this much exterior glass in an energy-conscious era such as ours and in a fierce winter climate such as Edmonton's, but the architects point out that most of the glass-enclosed area is a thin layer—"less than 12 percent of the building volume"—around an essentially opaque, brick-enclosed building. "Averaged over the whole building," they have recently written, "glazing constitutes 30 percent of the wall surface area."

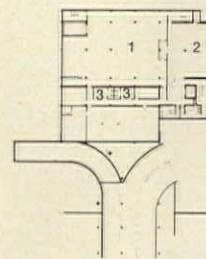
The glass lobby front half is united to the brick back-of-house half by more than the connecting mall. First, the greenhouse construction wraps around the building beyond the center mall in the form of a sidewalk awning of glass and metal that provides weather protection for audiences and passersby. Second, the brick, which is of a warm light-rust color that is traditional in the Province—it is made locally in the town of Medicine Hat, Alberta—is visible not only as the cladding of the back-of-house half of the building, but also is visible as the enclosing walls of the



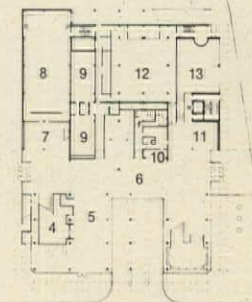
LOBBY LEVEL



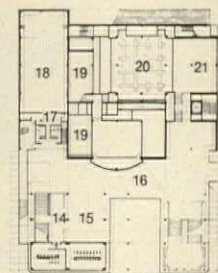
UPPER LEVEL



LOWER LEVEL



STREET LEVEL



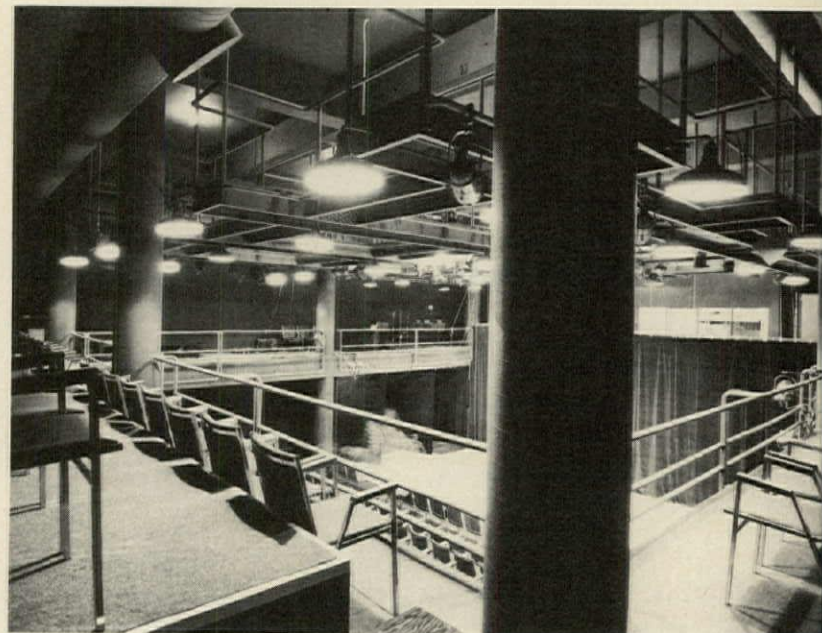
MEZZANINE LEVEL

30' 10 M

← N →



The Shocker Theatre (above) has a proscenium opening 37'-9" wide and 22'-6" high. The stage is 54 ft deep and 120 ft wide including wing space, and the 63'-6" high grid carries a total of 43 lines.



Rehearsal spaces (right) are spacious and have natural light. The Rice Theatre (facing page, bottom) is 50' x 60' and seats 200, mostly on steel bleachers that can be rearranged for numerous stage shapes. A perimeter balcony has removable floor for audience-stage flexibility.

main theater through the glass-and-metal lobby.

The color for a monument is a major decision for an architect, and the color for a theater interior is an equally difficult decision, perhaps because there seem to be so few innovative and appropriate choices left. Rust is the color of the Citadel Theatre exterior and interior. The brick color is complemented by unglazed red clay tile floors, by ribbed rust-red carpet, and by wine-rust plush upholstery for the theater seating. These are traditional and accepted uses of the same color.

But the architects have continued that color by painting or enameling rust virtually all other elements: the metal framing of the greenhouse lobby and sidewalk awning, the exterior metal panels on the upper levels, the steel decking of the ceilings, and the exposed ductwork throughout the front of house. The monochromatic scheme is monumental.

Myers has made what some may consider a mistake in this use of color at the Citadel; others will see it as an advance or, at least, as a different direction in the use of color for a building in its idiom. The aesthetic question at issue concerns the use of a single color in a Functionalist building where all the structural and mechanical elements are individually expressed.

Myers' use of industrial elements exposed as decorative items in elegant surroundings has been established before—in the Wolf and Myers residences and at the HUB building in Edmonton. He feels the use of these elements in this way owes more to his work with Louis Kahn and to his own Navy background than to the Pop aesthetic or to Charles Eames. Clearly it puts him in the rank with other second generation Kahnians.

At the Citadel, however, the monochromatic effect de-emphasizes definitions between elements of different materials and different functions, so that the building is Functionalist in its exposure of services but non-Functionalist in its expression of them. That is a bold, post-Modernist move.

To those who believe that functional expression demands color differentiation, the architects' monolithic rust may seem overly decorative—an all over whitewash, or rustwash. To those who feel the architects have made a new step in this area of expression, Myers' words are persuasive: "When you have so much going on, you can choose to color code each element. We chose to downplay it all to create a more subtle stage set for the action of the audiences."

Whatever that verdict may be, the Alberta brick makes an urban analogy to the historical tradition of that building material, and it evokes, at the least, the *memory* of the spirit of the place. To Myers, who has demonstrated a concern for historical preservation over the past decade—most notably at York Square and the Dundas Sherbourne housing in Toronto—this recall of the traditional brick color also "reinforces the already established tradition of the young theater company" in the continuity of the community. That is the best kind of bold move for a client. □



Data

Project: The Citadel Theatre, Edmonton, Alberta.

Architects: Barton Myers in association with R. L. Wilkin (formerly Diamond, Myers & Wilkin, Associated Architects).

Theater Consultants: Andis Celms and Phillip Silver.

Program: resident theater company facility to permit flexibility of productions in three distinct theaters with all back-of-house facilities in one building.

Site: a downtown lot of 90,000 sq ft leased by the city for \$1 per year; underground parking garage existed; pedestrian right-of-way to bisect the site from north to south.

Structural system: reinforced concrete column, beam, and slab construction throughout back-of-house area and in main theater. In front-of-house lobby, concrete columns and slabs are enclosed by exposed structural steel framing and glass. Steel stairs and walkways are suspended from large hollow steel beams, which double as ducts. Finished ceiling is structural steel decking. A deep concrete ring encircles main theater at roof level; double trusses, made up from hollow sections, span the theater. Checker plate spans between bottom chords for catwalks.

Mechanical system: gas-fired hot water; forced air and fin tube convectors beneath glazing. Air supply to theaters is high volume, low speed, and acoustically silenced. Ductwork exposed throughout.

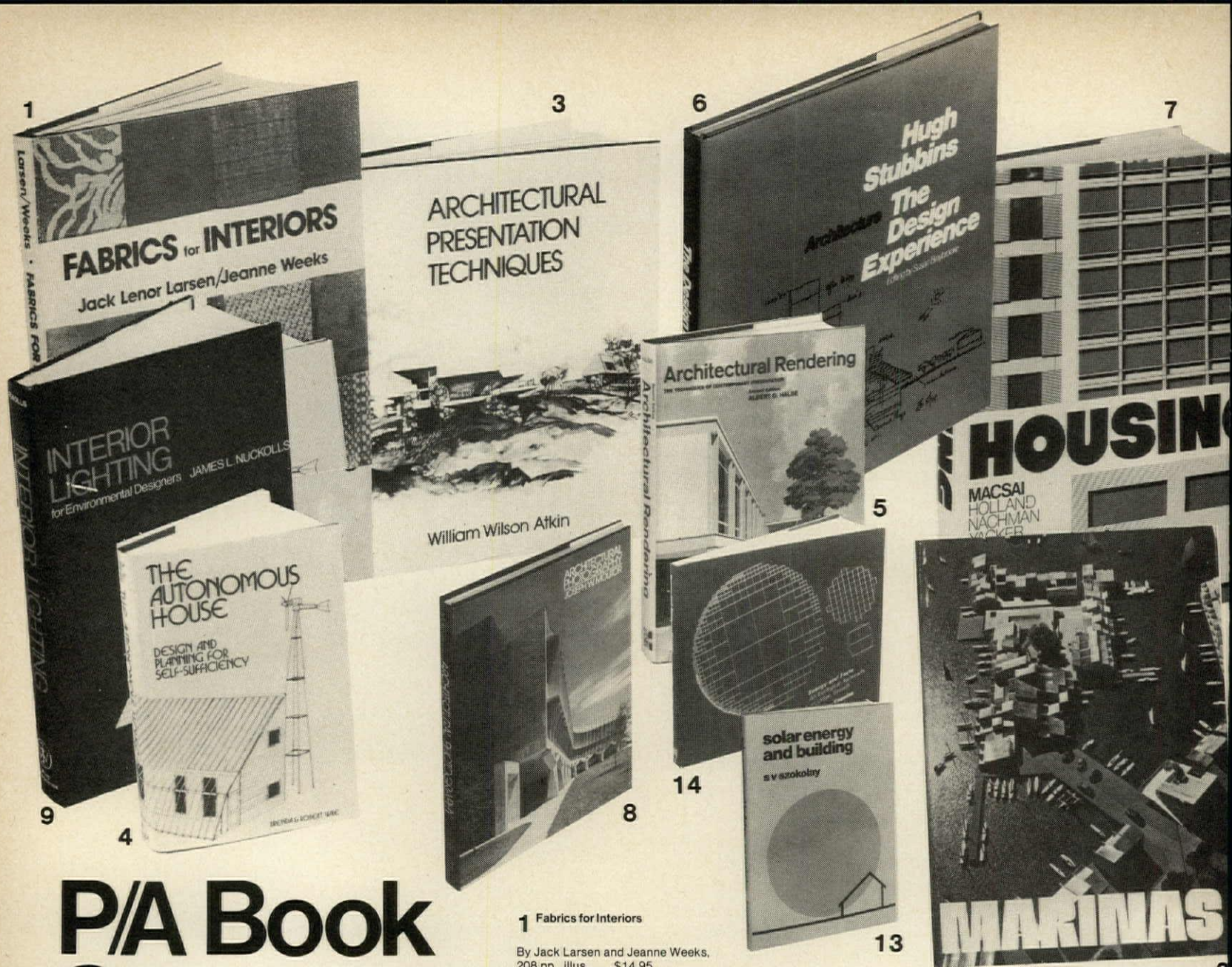
Electrical system: lobby areas have globe lights and spotlights suspended from ceiling deck. Stage lighting is controlled by Strand Century's MMS computer system, which has a memory of 260 cue settings controlling 120 dimmers.

Consultants: M. B. Engineering Ltd (structural). D. Panar & Associates Ltd (mechanical). Allsop Morgan Engineering Ltd (electrical). V. L. Henderson (acoustical). Carlson Management Services Ltd (construction manager and general contractor).

Client: The Citadel Theatre Company.

Costs: \$6.3 million.

Photography: John Fulker.



P/A Book Store

Each book has been selected for its usefulness to you in your professional practice. **Prices apply in the U.S. only.** It is not necessary to send payment with the order. Circle appropriate numbers on the Reader Service Cards in the back of this issue, add your name and address and mail.

For faster service, send the card in an envelope to:

Mrs. Eleanor Dwyer
Progressive Architecture,
600 Summer Street,
Stamford, Ct. 06904

P/A Back issues

A limited supply of the following issues of P/A are available at \$4.00 per Copy:

June	Eisenman house/Open office planning
May	Future of Architecture
April	Alvar Aalto/Wood: detailing and treatments
March	Women in Architecture/Ceiling Systems
February	Payette/Stern/Chrysalis/Gwathmey-Siegel
January	24th annual P/A Awards
December	Education/Participatory/Girard/Concrete Masonry

Send both to:

Mrs. Eleanor Dwyer
Progressive Architecture
600 Summer Street
Stamford, Ct. 06904

1 Fabrics for Interiors

By Jack Larsen and Jeanne Weeks, 208 pp., illus., ... \$14.95

Completely geared to current trends, this book can make the difference between costly mistakes and successful, personalized interiors. It explains functions and requirements of fabrics for windows, furniture, walls and ceilings.

Circle B601 under Books.

2 Marinas: A Working Guide to Their Development and Design

By Donald W. Adie, 336 pp., illus., ... \$39.95

Boating occupies an increasingly important position in the major growth industry of leisure. Because boating involves vast expenditures, and the need to conserve and use water resources wisely, these facilities demand high expertise in planning and design, which this up-to-date guide provides.

Circle B602 under Books.

3 Architectural Presentation Techniques

By William W. Atkin, 196 pp., illus., ... \$15.95

This book includes presentations ranging from simple sketches in pencil and pen-and-ink to elaborate drawings, photographs, slide presentations and various combinations of media achieved with overlays, camera techniques and modern reproduction methods.

Circle B603 under Books.

4 The Autonomous House

By Brenda and Robert Vale, 224 pp., illus., ... \$10.00

Two architects offer practical solutions to the design of a house that operates independently within its environment. This "Autonomous House" is not linked to utility lines for gas, electricity, water, or drainage;

but instead uses the energy of sun, wind and rain to service itself and process its waste.

Circle B604 under Books.

5 Architectural Rendering: The Techniques of Contemporary Presentation

By Albert O. Halse, 326 pp., illus., 2nd edition, 1972 ... \$29.00

This completely up-dated revision of the most widely used guide to architectural rendering covers all working phases from pencil strokes to finished product — and shows how to obtain the desired mood, perspective, light and color effects, select proper equipment and work in different media.

Circle B605 under Books.

6 Architecture: The Design Experience

By Hugh Stubbins, 190 pp., illus., ... \$18.95

Here is a book by one of today's foremost architects that examines such questions as: What is architecture? How does conceptual design come about? Is the team approach effective? How can the client, architect and others in the building team work together to improve the building environment?

Circle B606 under Books.

7 Housing

By Macsal, Holland, Nachman, Yacker, 483 pp., illus., ... \$30.00

This book on the subject of multiple housing serves as a refresher course for the architect, a handbook for the novice, a reference book for the student, a course guide for the professor and as background for the housing official.

Circle B607 under Books.

8 Architectural Photography

By Joseph W. Molitor, 164 pp., ... \$22.50

Architects, builders, designers and contractors who use photography for publicity, public relations, brochures and for progress photographs will find this volume invaluable. It shows how to work with the handful of architectural photographers who do the bulk of this specialized work, and how to gain maximum benefit from their product.

Circle B608 under Books.

9 Interior Lighting

By James Nuckolls, 371 pp., illus., ... \$22.00

In this book technical information is directed to the designer who needs to know *why* lighting is applied, as well as *how* to do it. The text is not meant to replace engineering references but rather to augment them for the designer who works with the art as well as the science of lighting.

Circle B609 under Books.

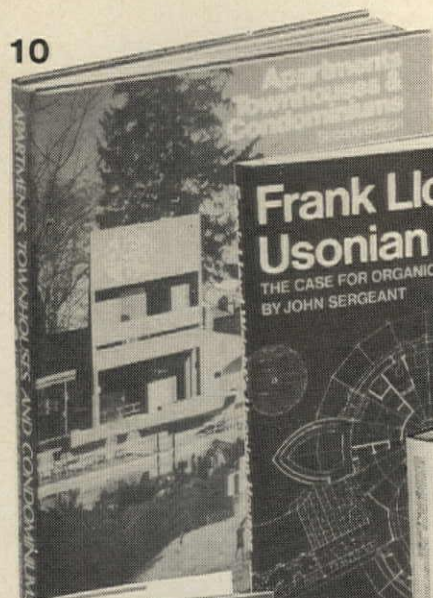
10 Apartments, Townhouses, and Condominiums

Edited by Elisabeth Kendall Thompson, 228 pp., illus., ... \$21.95

This heavily illustrated volume takes into consideration a number of new criteria in its examination of both low- and high-rise buildings, as well as townhouses. In-depth coverage of garden complexes on suburban sites, designing for low and moderate income groups, conversions, large scale developments, apartments and condominiums for resort areas, and interiors round out this useful, up-to-date volume.

Circle B610 under Books

10



15

12

11

11 Frank Lloyd Wright's Usonian Houses

By John Sergeant,
207 pp., illus., . . . \$24.50

In this well-illustrated and thoroughly documented book, the late period of Wright's prolific career is reassessed and his philosophy of building with nature rather than against it is analyzed. Wright's Usonian houses, his Taliesin working communities and his plan for Broadacre City has a new relevance as energy conservation and ecological integrity have become the dominant concerns of the environmental design professions.

Circle B611 under Books

12 Designer's Guide to OSHA

By Peter S. Hopf, A.I.A.,
288 pp., illus., . . . \$19.50

This practical volume translates OSHA's tens of thousands of words into easy-to-use drawings, diagrams, charts and graphs. With OSHA violations increasing, engineers obviously need a working guide to compliance with government job safety and health standards. This book fills that need. All material is presented in the same sequence as the OSHA regulations are written.

Circle B612 under Books.

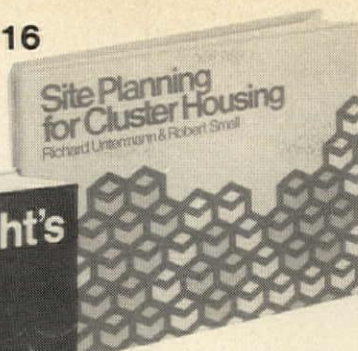
13 Solar Energy and Building

By S. V. Szokolay
148 pp., illus., . . . \$18.50

This leading solar architect describes principles and collection methods, and presents practical examples and views of the future of solar energy in buildings, with emphasis on water and space heating. 30 "solar houses" are featured, complete with published details and performance data.

Circle B613 under Books.

16



Frank Lloyd Wright's Usonian Houses

THE CASE FOR ORGANIC ARCHITECTURE
BY JOHN SERGEANT

Building Construction Illustrated

Frank Ching

20

Specifications For Architecture Engineering & Construction

Chesley Ayers, P.E.

23

DRAWING FILE

for architects, illustrators and designers

MARC SZABO

17



14 Energy and Form

By Ralph L. Knowles,
198 pp., illus., . . . \$27.50

This is a scholarly, theoretical book, a major work that will be used for years to come. The projects described concentrate on reducing environmental problems in individual or groups of buildings by controlling shape and structure, scale and surface, volume ratio, location and orientation, isolation and insulation.

Circle B614 under Books.

15 Decorative Art and Modern Interiors 1977, Vol. 66

Edited by Maria Schofield,
184 pp., illus., . . . \$24.95

This annual review of international trends in furniture, glass, ceramics and other fine crafts illustrates 20 interiors that show the many ways in which art can become part of our environment.

Circle B615 under Books.

16 Site Planning for Cluster Housing

By Richard Untermyer &
Robert Small
306 pp., illus., . . . \$22.50

An invaluable guide to planning low-rise, medium-density cluster housing environments. Also covers jurisdictional and technical considerations of site planning, and includes more than 600 drawings and photos that illustrate design principles and techniques.

Circle B616 under Books.

17 Drawing File for Architects, Illustrators and Designers

By Marc Szabo
251 pp., illus., . . . \$12.50

This book provides over 200 pages of figures — in the most common and natural positions, activities, and types of wearing apparel, as well as dozens of drawings of boats and cars, all of which can be copied freely — by

direct tracing, photostats, or photocopying machine. The pages tear out easily to form an easily accessible fingertip scrap file.

Circle B617 under Books.

18 Shopping Centers: Planning, Development, Administration

By Edgar Lion,
224 pp., . . . \$16.00

From the original design concept and planning to the various stages of development and construction, right on through to their ultimate existence as successful business entities, every aspect of the shopping center is discussed and examined. Includes methods for dealing with existing centers which require improvements.

Circle B618 under Books.

19 Trees

By Robert L. Zion,
168 pp., illus., . . . \$12.95

An inexpensive paperback version of the book with virtually everything you want to know about using trees to complement the buildings you design. Both aesthetic and practical considerations are given, including tree characteristics, as well as cost considerations, planting, maintenance, rate of growth, and city and seashore recommendations.

Circle B619 under Books.

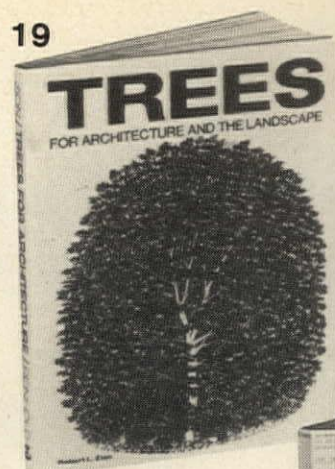
20 Building Construction Illustrated

By Frank Ching,
320 pp., illus., . . . \$17.95

Charmingly hand-lettered by the author, this book presents step-by-step techniques in residential and light construction. Containing over 1,000 drawings, it covers materials, finishes, fastenings, posts, trusses, slabs, wood joists, light steel/aluminum, structural calculations, planning and site work, cost estimating, and construction sequencing.

Circle B620 under Books.

19



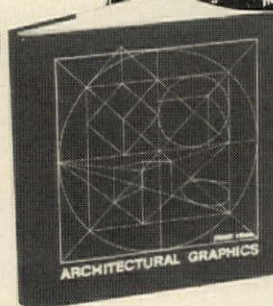
25



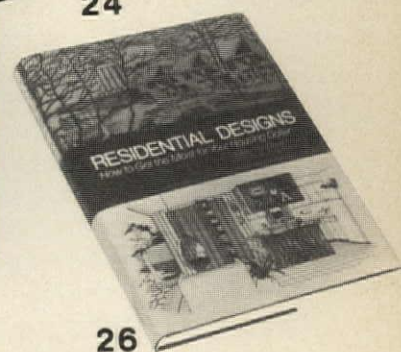
22



21



24



26

21 Architectural Graphics

By Frank Ching,
128 pp., illus., . . . \$9.95

This book presents graphic techniques available for conveying architectural ideas. Included is know-how on equipment and materials; drafting; architectural conventions for orthographic, parallel and perspective drawings; devices for rendering tonal/textural values and context; graphic symbols and lettering; free-hand sketching and diagramming; and effective presentation of design proposals.

Circle B621 under Books.

22 Hotels, Motels and Condominiums

By Fred Lawson,
238 pp., illus., . . . \$39.50

This is a book on design, planning and maintenance. It is an exhaustive, international survey with hundreds of on-site illustrations and examples. A must for all architects, engineers, owners, developers and financiers worldwide.

Circle B622 under Books

23 Specifications: An Introduction for Architecture and Engineering

By Chesley Ayers,
448 pp., . . . \$16.50

This is a comprehensive introduction to the field of architectural and engineering specification writing which has, in previous editions, established itself as a leading reference work. The entire field, and every phase of the specification writer's work, is thoroughly covered, including legal citations by name and number, industrial specifications, value engineering, computerized specifications, and government safety regulations.

Circle B623 under Books

24 Creative Communications for a Successful Design Practice

By Stephen A. Kliment,
192 pp., illus., . . . \$22.50

This book, written by a design communications specialist, is a valuable tool for architects, planners, engineers, interior and industrial designers who want to develop the skills and techniques needed to communicate effectively with present and potential clients, the media and the public.

Circle B624 under Books.

25 Homes Are for People

By St. Marie,
400 pp., illus., . . . \$11.95

Although the title refers to homes, its remarkable sampling of interiors can greatly help in designing, building, decorating or furnishing virtually any environment demanded by clients or tenants. Gives ready-to-use information for layouts, dimensions and coordination of colors, material and furnishings.

Circle B625 under Books.

26 Residential Designs

Edited by David E. Link,
192 pp., . . . \$14.50

Hi-rise or low cost, condo, multi-family, custom or townhouse, here's a design book that shows you the very best in every class. Complete collection of designs with over 200 illustrations featuring techniques used by some of the nation's leading builders, planners and designers.

Circle B626 under Books

Revised A201 plays supportive role

William T. Lohmann

Revisions to AIA Document A201, 'General Conditions of the Contract for Construction' are still causing rumbles as related documents are slow to follow with necessary changes. The author comments on the revisions, one by one, pointing out the benefits accruing to the architect by reason of the revisions.

Almost a year after the American Institute of Architects issued its revised Document A201, "General Conditions of the Contract for Construction," reverberations are still being felt. Perhaps that should not be surprising for a document which is used for most architectural construction. One must also allow for the time lag which most offices experience in adopting current practices. Certainly the slow revision of related contract and backup documents has caused some of the rumble. But the revisions published in August 1976 were not earth-shaking.

Two changes which appeared in the 1970 edition of A201 were more far-reaching than any of those incorporated in 1976. One established the Instructions to Bidders as a separate document. Several provisions were entirely deleted from the General Conditions and placed in the new Instructions to Bidders, thereby removing them from legal significance in the contract documents. It forced the basic reorganization of contract documents across the country.

The second major change was also basic in nature, relieving the architect of his historic right to stop the work. That authority had been found in construction documents as early as 1880. But court interpretations ruled that the right to stop work implied the responsibility to do so in activities of the contractor over which the architect never intended to assume an obligation or risk. It had to go.

Since release of the new edition of A201, most of the discussion has centered on the changes which seem to depart from "traditional" practice. But most of them simply clarify the relationship between the architect and contractor, thereby strengthening their traditional roles as designer and executor. For example, the architect has always been

responsible for ensuring compliance with applicable design codes (4.7.3) and for errors and omissions in his own documents (4.2.1). The contractor is only expected to cooperate by reporting any inconsistencies of which he is

1976 Edition A201: representative passages

New passages marked in italics.
Deleted passages shown drawn through.

2.2.3 The Architect will ~~make periodic visits to visit the site at intervals appropriate to the stage of construction~~ to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. *However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work.* On the basis of his on-site observations as an architect, he will keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor. ~~The Architect will not be required to make exhaustive . . .~~

2.2.4 The Architect will not be responsible for *and will not have control or charge of* construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not be responsible for *or have control or charge over* the acts or omissions of the Contractor, Subcontractors, *or any of their agents or employees*, or any other persons performing any of the Work.

2.2.16 The Architect will conduct inspections to determine the dates of Substantial Completion and final completion, will receive and *forward to the Owner for the Owner's review* written ~~guarantees~~ warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment *upon compliance with Paragraph 9.9.*

4.5.1 The Contractor warrants to the Owner and the Architect that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work ~~not conforming to these standards requirements, including substitutions not properly approved and authorized~~, may be considered defective. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. *This warranty is not limited by the provisions of Paragraph 13.2.*

4.12.2 *Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.*

5.2.1 Unless otherwise ~~specified in required by~~ the Contract Documents or ~~in the Instructions to Bidders-Bidding Documents~~, The Contractor, as soon as practicable after the award of the Contract, shall furnish to the Owner *and the Architect in writing for acceptance by the Owner and the Architect* a list of the names of the ~~Subcontractors~~ *persons or entities (including those who are to furnish materials or equipment fabricated to a special design)* proposed for each of the principal portions of the Work. The Architect ~~shall~~ *will promptly notify reply to* the Contractor in

Author: William T. Lohmann, AIA, FCSI is Chief Specifier for C.F. Murphy Associates, Chicago, Illinois.

aware. But the contractor is still responsible for complying with laws and ordinances bearing on the performance of the work (4.7.2).

Under other changes, the architect's approval is no

writing stating whether or not if either the Owner or the Architect, after due investigation, has reasonable objection to any Subcontractor such proposed person or entity, on such list and does not accept him. Failure of the Owner or Architect to make objection promptly to any Subcontractor on the list reply promptly shall constitute acceptance of such Subcontractor notice of no reasonable objection.

5.2.2 The Contractor shall not contract with any Subcontractor or any such proposed person or entity or organization (including those who are to furnish materials or equipment fabricated to a special design) proposed for portions of the Work designated in the Contract Documents or in the Instructions to Bidders or, if none is so designated with any Subcontractor proposed for the principal portions of the Work who has been rejected by to whom the Owner and/or the Architect has made reasonable objection under the provisions of Subparagraph 5.2.1. The Contractor will shall not be required to contract with any Subcontractor or person or organization against anyone to whom he has a reasonable objection.

7.7.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Architect timely notice of its readiness and of the date arranged so the Architect may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests and or approvals conducted by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspections, tests or approvals.

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values of allocated to the various portions of the Work, including quantities if required by the Architect, aggregating the total Contract Sum, divided so as to facilitate payments to Subcontractors in accordance with Paragraph 5.4, prepared in such form as specified or as the Architect and the Contractor may agree upon, and supported by such data to substantiate its correctness accuracy as the Architect may require. Each item in the schedule of values shall include its proper share of overhead and profit. This schedule, when approved unless objected to by the Architect, shall be used only as a basis for the Contractor's Applications for Payment.

12.1.1 A Change Order is a written order to the Contractor signed by the Owner and the Architect, issued after execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. Alternatively, the Change Order may be signed by the Architect alone, provided he has written authority from the Owner for such procedure and that a copy of such written authority is furnished to the Contractor upon request. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order may also be signed by the Contractor if he agrees to indicate his agreement therewith, including the adjustment in the Contract Sum or the Contract Time. The Contract Sum and...

longer required for the schedule of values (9.2) and the progress schedule (4.10). These are properly the responsibility of the contractor, a part of his process for completion of the project. The contractor is also solely responsible for his choice of superintendent and other employees (4.9.1). He must, however, still submit cost information for use as a basis for payment, unless the architect objects to it. The same is true with regard to the selection of subcontractors (5.2). Both the owner and architect retain the right to object to the contractor's choice of subs—and now may also veto material suppliers and fabricators.

The basic premise of job-site responsibility has also been reinforced. The architect has traditionally disclaimed responsibility for construction methods, work sequence, and safety precautions in connection with the work. So the added phrase "and will not have control or charge of" is positive (2.2.4). It will help reduce the architect's potential liability for aspects of construction over which he has no actual control.

True, the architect can no longer issue change orders without the owner's signature when cost and time are involved (12.1.1). The provision for blanket "written authority from the Owner" of the architect's right to issue change orders has been dropped. But the architect remains in control of the substitution and change order processes and requires the owner and contractor to agree to modifications of their contract. In fact, subparagraph 4.5.1 categorizes unauthorized substitutions as nonconforming and defective work, which may be rejected by the architect. That authority may have been implied before but is emphatic now. The architect also retains the right to make minor (written) modifications if cost and time are not factors (12.4.1).

Warranties are still negotiated and specified by the architect, although A201 now requires that written documents responding to the specifications must be forwarded to the owner for review (2.2.16). Since this requirement has been added because of the increasing legal implications of warranties, it would behoove the architect to have the wording of warranties reviewed before, as well as after, they have become part of the contract. The owner's legal counsel is best qualified to do this.

Other clarifications in the new A201 reflect recent court interpretations, much like the deletion of the architect's right to stop the work in 1970 but less comprehensive in scope. For instance, in subparagraph 2.2.3, the words "make periodic visits to the site" have been revised to "visit the site at intervals appropriate to the stage of construction." The courts have held that "periodic" implies "regular" visits, which is far from the usual intent. Another change incorporates a definition for "product data" (4.12.2) as part of the information to be submitted by the contractor, thereby making it a legal part of the project documentation.

Possibly the revisions with the greatest eventual impact are once again organizational in nature. Certain requirements have been reduced in scope in the General Conditions, making their amplification in the appropriate CSI Division 1 sections almost mandatory. These include description of the project schedule (4.10) and schedule of values (9.2), substitutions (4.5), allowances (4.8), submittals (4.12), cleaning up (4.15), and tests (7.7). In a future edition of A201, they may be removed altogether. □

A California bank's round-the-clock operations center. **ELEVATORS BY DOVER**

The Crocker Bank's Operations Center for Northern California in San Francisco hums with activity 24 hours a day, seven days a week. Some 1,300 people work round-the-clock operating the electronic data equipment required for modern banking. The building is served by six Dover Elevators with Computamatic® control. This modern elevator control system monitors traffic demand and dispatches cars for efficient handling of the vertical transportation requirements. For more information on Dover Elevators, write Dover Corporation, Elevator Division, Dept. B, P.O. Box 2177, Memphis, Tenn., 38101. In Canada: Dover/Turnbull.

DOVER

Crocker Bank Operations Center, San Francisco, California
Owner: Continental Development Corporation
Architects: Skidmore, Owings, Merrill
Contractor: Continental Construction Corporation
Dover Elevators installed by Dover Elevator Co.
of Oakland, California

Circle No. 313, on Reader Service Card



Industrial evolution

Steven Winter

'Industrialized Housing' is an often-used term defined with considerable variability. In the context of this article it is considered to be housing substantially produced by some form of industrialized pre-assembly.

Usually, by Industrialized Housing we mean that at least 30 to 40 percent of the dwelling unit is pre-fabricated into completed building components requiring no on-site processes other than connection. Industrialized Housing is one form of "Systems Building," which is considered here to be a management approach rather than a form of hardware. Systems Building is the concept of using available resources (labor/skills, materials, land, energy, and finance) to satisfy user requirements through optimal use of available know-how (management and technology).

The Real World of Industrialized Housing in the United States consists mostly of single-family dwellings. This is hardly surprising, despite what advocates of high-rise buildings tell us, for a very simple reason: single-family dwellings *can* all be the same, multi-family dwelling units *can not*.

This item is worthy of further exploration. In a three-story building each story will be different. One unit connects to the foundation, one includes the roof, and the center one connects to the two adjacent units. Similarly three units attached side by side will be different. However, single-family units can clearly be identical, and thereby more appropriate for assembly line production. In practice this is very much the case in all multi-family industrialized housing. Sometimes the differences between units are relatively minor or subtle, but the nature of the industrialized process is such that *any* change, no matter how minor, will require changes

Author: Steven Winter heads the New York firm of Steven Winter Associates, Building Systems Consultants, which provides design and engineering services to producers of manufactured housing. The firm's clients, including major homebuilders in the United States and abroad, have produced over 50,000 housing units in the past 12 months. Winter, a Registered Architect, is an Adjunct Associate Professor of Architecture at Columbia University and a Visiting Associate Professor of Architecture at Pratt Institute.

in documentation, inventories, production, or assembly, each of which is troublesome and costly.

There is another, more important and basic, factor which renders the industrialized process more suitable to single-family dwellings. A multi-family building or large-scale project will, of course, consist of many dwelling units. Such projects are more difficult to carry out than single family houses; more proposals of this kind fall short of exception. Moreover, such projects often require that the buildings be different from any previously built project in form, layout, amenity, and finish.

As a result, a manufacturer producing components for multi-family housing units needs more lead time to gear up for production and frequently has a sharp drop-off at the end of the production cycle. He must then pause to gear up before commencing the next project and undergo a new learning curve at its start. The unpredictable, volatile, and variable production cycle is the key reason for the failure of industrially produced multi-family housing projects while the predictability, steady growth/decline and relative uniformity of industrially produced single-family dwellings is the main reason for their growth in the United States.

The Real World of Industrialized Housing in the United States is not new, nor inconsequential. The industry has enjoyed steady, though unheralded, growth for the past 30 years to the point where it is estimated that in 1976 somewhere between 60 and 75 percent of all housing in the nation was industrially produced (the range is due to the less-than-precise definition of the term). This housing, consisting of mobile homes, modular homes, and panelized and other techniques, is produced by some 3000 companies at 5500 locations throughout the United States, the average plant producing 250 homes per year.

The real industrialized housing producer operates out of obscure small towns in the industrial states. His homes are similar in appearance, basic in layout, and identical in construction technique. His product is generally quite banal but high in quality, responsive to consumer needs, and moderate in cost. This builder doesn't seek publicity, rarely appears in glossy magazines and never crosses paths with architects. He is unknown to Wall Street, big cities, or schools of architecture, yet he produces three-fourths of all our housing.

Technics: Industrialized housing

Mobile homes

Mobile homes embody the most sophisticated and efficient techniques for the industrialized production of housing units. It should be made clear that today's mobile homes truly *are* housing units. They are not trailers, campers, or motor homes. Although they are legally "mobile" they are very rarely moved from the foundation on which they are first placed.

Mobile homes are no longer flimsy or unstable. They are now required to conform to the structural, safety, and performance requirements set down by HUD under the 1975 Federal Mobile Home Construction and Safety Standard. The standards are monitored by continuous in-plant inspection of units by independent third-party inspection agencies such as Underwriters' Laboratories and U.S. Testing Company.

The standards are quite stringent and differ only marginally from the standards and codes governing other types of housing units. Moreover, the standards are the same throughout the U.S. and their acceptance is legally binding throughout the country. Mobile homes therefore constitute the only housing type with nationally accepted and enforced construction standards.

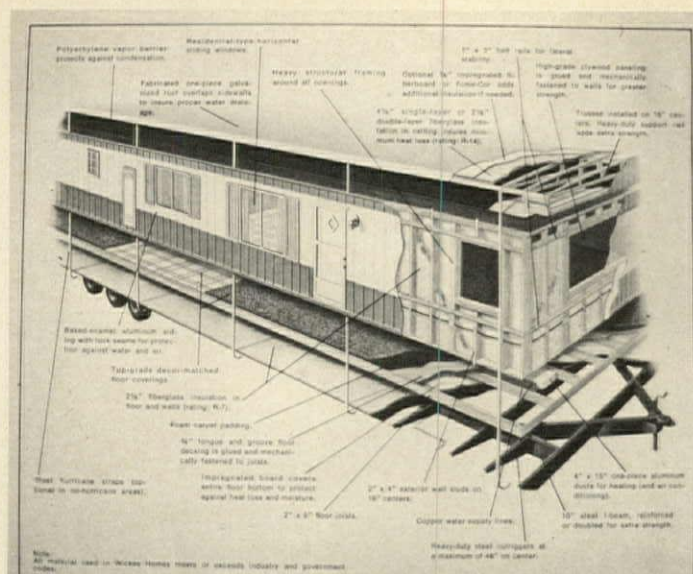
The mobile home assembly line is set up to absolutely minimize the time and cost required to produce a sq ft of shelter. The cost of the average mobile home consists of 8 percent for labor and 92 percent for materials. By comparison, the cost of on-site housing construction includes about 50 percent labor and 50 percent materials.

A typical two-bedroom mobile home of 840 sq ft requires about 140 man hrs and about 24 hrs of in-plant assembly-line time for completion. Costs range from \$7 to \$10 per sq ft FOB plant, and a completed unit on site costs about \$8000 to \$16,000.

The mobile home industry is not new but has grown substantially from its trailer industry beginnings of 30 years ago. 1976 shipments of mobile homes totalled 265,000 units, up from 215,000 in 1975, but down from the all-time high of 600,000 in 1973. In 1976 there were 350 mobile home manufacturers with a total of 550 factories, each producing an average of four units per day.

Recent trends in mobile homes have been toward bigger and more sophisticated units, more amenities, and more purchaser options. "Double-wide" units, consisting of two separate three-dimensional halves which are joined together on site, were introduced several years ago and are fast outpacing "single-wides" in growth. More recently, "triple-wides," two-story units, and other hybrids have evolved, all but obliterating the original concept and appearance of a mobile home. The trend is toward the "house look." Reflecting this trend the industry's major association, the Mobile Home Manufacturers Association, changed its name in 1975 to the Manufactured Housing Institute.

Architects rarely view mobile homes other than with disdain and usually from fast cars on a highway. But turning our backs to them will not make them go away; the public loves them and can afford them. We owe it to ourselves and to the world to acknowledge mobile homes and to confront the industry as we would any other area of visual blight.



Mobile home construction standards have been tightened over the past years (top), and recently mobile homes (middle) have begun to use materials normally seen on standard houses, such as the shakes and shingles seen in the Yankee Uni Homes of New Hampshire. In general, mobile home appearance trends are toward the "house look" (above), as seen in the unit by Guerdon Inds., New Mexico.



Mobile homes are becoming larger, as seen (top) in a unit that is 28' x 48' and is two stories high, produced by Champion Home Builders in Michigan. But even if they are physically and aesthetically improved, the old image of the "trailer" lingers on (above), which architects and others continue to view with disdain.

Technics: Industrialized housing

Modular housing

Modular housing is one step away from mobile homes (many of today's producers came from that industry), a step up in quality, rigidity, degree of consumer choice and price; and a step down in manufacturing sophistication and efficiency.

Modular housing consists of two or more three-dimensional "boxes" which are shipped complete from the factory and connected to each other on the site. Although the predominant housing type is a single-family unit consisting of two modules side-by-side, similar to a double-wide mobile home, modular units have been used to produce attached and multi-story housing in many configurations.

Structurally the distinction between a mobile home and a modular home can be quite simply stated. There is none. While a mobile home is, of necessity, built upon a "mobile" chassis this is also true of many of the homes that have received a modular classification. And, with the advent of the double-wide mobile home, much of the site work, connection techniques, and structural design are identical.

The similarity of modular home to mobile home construction is obvious but the nonstructural differences are important and heavily stressed by modular producers. The National Association of Home Manufacturers, seeking to stress the differences (while the Manufactured Housing Institute is seeking to minimize them) defines modular housing as "... subject to real estate taxes and eligible for long-term financing."

By virtue of complying with building codes, modular homes become eligible for permanent mortgage financing at favorable interest rates, 8 to 9½ percent with long-term payment schedules, 15 to 35 years. Mobile homes remain chattel property and, although not usually required to pay real estate taxes, are burdened with interest rates of 11 to 13 percent over periods of 7 to 15 years. Recently some trends have recognized the increased quality and longevity of mobile homes and have extended a midway rate for larger units.

Wood framing is still the predominant structural technique in modular housing, although aluminum has been tried and light-gauge steel, often galvanized, accounts for a minor market share. Stressed-skin panels with foam, wood, or honeycomb cores are occasionally used.

Modular housing accounted for about 105,000 housing units in 1976, representing slow growth from its beginnings as an offshoot of the mobile home industry in the early 1960s. An interesting phenomenon occurred during the Operation Breakthrough period of 1968-70. Many companies entered the modular housing field for the first time, and with much fanfare. Large and powerful industrial corporations such as General Electric, Dow Chemical, Lockheed Aircraft, Alcoa, and U.S. Steel entered the arena with the supposition that sophisticated corporate management techniques would prove successful in housing as they had in other fields. Wrong! Housing is a tight-budget, low-overhead, quick-decision industry that proved totally elusive to Fortune 500 companies, and by 1972 none remained in their original format.

The second group to become involved included large



Vernacular building types are now seen in modular homes such as in this three-bedroom model by New England Modular Homes of Maine.

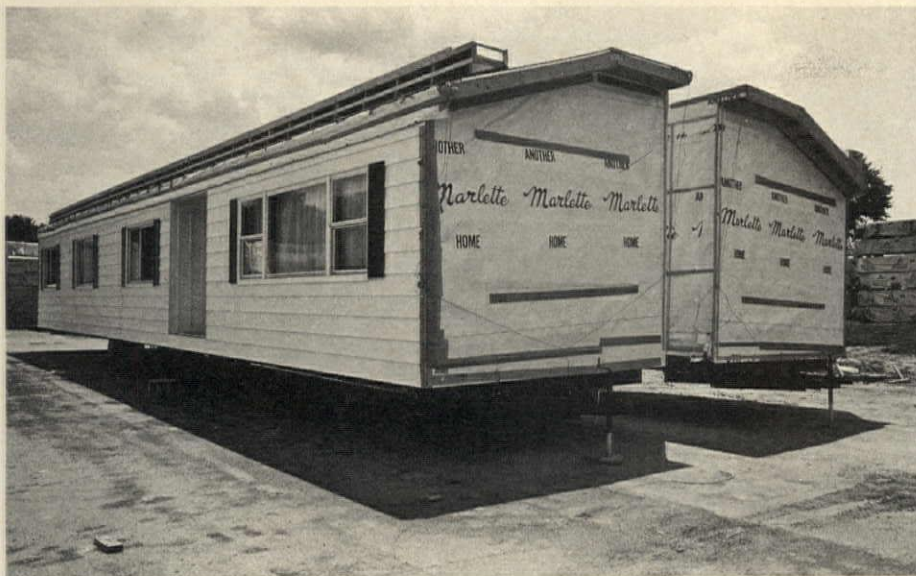
real estate development and construction firms, such as Tishman, George A. Fuller, Bechtel, Lincoln Property, F.D. Rich, and Rouse. But these groups were land-oriented rather than manufacturing oriented. Their projects were large, sporadic, and difficult to consummate. They were not able to develop a steady, continuous, projectable demand on their production facilities and the resulting severe peaks and valleys of production suppressed development. Rich has continued to produce a few modular structures, such as the recently opened Marriott Hotel in Stamford, CT. By 1973, the industry had returned largely to the original participants, the ex-mobile home producers. To their credit these people totally ignored Operation Breakthrough. Their continued success lay in the development of a network of dealers, similar to those of the automobile industry, whose responsibility was to interface with the consumer and act as the ultimate sales organization, backed by manufacturer advertising and know-how. Sales, once consummated by the dealer, are reported back to the factory and each house is produced precisely as and when ordered, replete with all sections: colors, furnishings, appliances, accessories, and other design options. The completed house is shipped to the dealer, who usually acts as foundation builder, house erector, and problem fixer. Houses are rarely produced on speculation or sold on consignment.

A typical modular plant with 500-house-per-year capacity will have about 100 dealer/representatives in a 200-mile radius area. The resulting average of five houses per dealer per year assures the producer of his continuous and steady flow of orders and the basis of a sound manufacturing operation. In 1976, 250 companies were active in the production of modular housing in the U.S.

The higher quality of materials used in modular construction (gypsum board vs. plywood paneling, shingles vs. metal roof, etc.) results in lower productivity. A modular home will consist of 10 to 20 percent labor cost. Construction costs range from \$12 to \$16 per sq ft F.O.B. plant, and a completed house on site sells for \$18,000 to \$40,000.

Panelized housing

As the name implies, panelized dwelling units are made up of a series of prefabricated "two-dimensional" components, including wall, floor, and roof panels, partitions,



Large units are shipped in sections to comply with shipping rules established by road transportation authorities. In the modular house (left) by Marlette Homes of Pennsylvania, the peak of roof folds down and eaves fold up.



Edward M. Coplon



J. Alexander

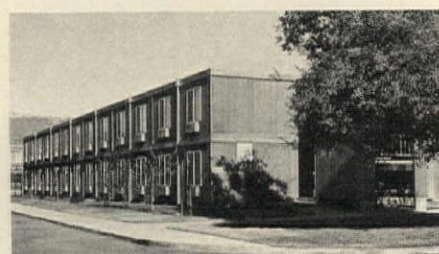
A modular home in New York (far left) is wood-framed, with three boxes side-by-side. Produced by Salem House, Pennsylvania, architect was Edward M. Coplon. Stacked multi-family modular units (left) are wood-framed and produced by Boise Cascade of Georgia, with Frank Hall as designer.



One section of a two-section wood-framed single-family modular dwelling is ready for shipment (far left). Produced by Muncy Homes, Pennsylvania. Mobile and modular homes frequently differ only in marginal ways. Muncy Homes' unit (left) is built as both; the final definition is dictated by the method of financing.



Modular units are also constructed with steel frame, such as the multi-family unit (far left) by Bock Industries of Indiana, (left) and the military barracks in Delaware produced by National Modular Systems Corporation, New York.



Modular barracks for the military are also made with foam-core, stressed-skin panels (far left), such as those produced by International Mobile Homes in California, designed by architect Steven Winter. The new modular-construction Marriott Hotel in Stamford, Connecticut by F. D. Rich Company (left) shows the process at a much larger scale.

Technics: Industrialized housing

plumbing walls, etc., which are prefinished in the factory and connected to each other on site.

The sizes of the panels and components will vary (a wall panel might be 2 ft to 42 ft in length), as will the degree to which they are prefinished.

In many cases two-dimensional components will be combined with one or more three-dimensional modular mechanical cores. The mechanical, or "wet," core consists of some combination of bathrooms, kitchen, utility/laundry room, and furnace/equipment room. These rooms embody a concentration of labor-intensive trades and it frequently makes sense to avoid expensive connections and finishes on site by prefabricating this section in its entirety.

The distinction between this type of construction and modular or mobile units is that the form of the dwelling unit is no longer restricted to a rectangular box of limited size. Shapes of dwelling units can be, and frequently are, highly irregular and organic. Raked roofs, oblique wall angles and changing floor levels are quite normal. Virtually any house design can be panelized, and many producers not only offer a broad range of standard house models, but also will take the customer's own house plan and produce the prefabricated components from which it can be assembled.

The predominant material used in this type of production is again wood framing, and construction is usually limited to about three stories in height. Multi-family and attached housing types are often built, but current construction volume is concentrated primarily in single-family detached housing, reflecting the national trends. Wood-framed panelized housing accounts for a remarkably high volume of housing built each year. In 1976 an estimated 500,000 units, or 30 percent of all housing, employed this technique.

Many housing producers will try very hard to play down the fact that their housing is partially prefabricated: "Non-modular," "We are not prefabs," "Custom Series" are common catch words. Prefabrication still carries an image of flimsiness, and the term is generally taboo. Many of the larger volume-builders of housing, prominent in National Association of Homebuilders affairs, have their own highly sophisticated factories producing panelized components for their on-site crews. Fox & Jacobs, Ryan Homes, and Bob Schmitt Homes are but a few.

Conversely, some of the panelized producers proudly



Panelized housing components are produced in factories (above) such as American Standard Homes' of Virginia, in assembling gang-nailed trusses.

advertise their centralized factory operations to their buyers, and emphasize the quality and reliability that result. Kingsberry Homes (Boise Cascade), National Homes, and Scholz Homes are in this category.

The typical panelized plant produces a much larger volume of housing than a modular plant. This is partially due to the fact that a modular unit is approximately 80 percent complete when it leaves the factory, whereas a panelized unit is 30 to 60 percent complete, the remainder requiring on-site completion. Due to the more compact packaging of components, economic shipping distances are greater with panelized units, and plants themselves tend to be larger.

Wausau Homes, Wausau, WI, is an industry leader in panelized homes with mechanical cores. The main factory has 300,000 sq ft under roof with a production capacity of 25 homes per day. The National Homes panelized plant in Lafayette, IN, has 575,000 sq ft with a capacity of 40 homes per day.

Builder/dealers are more critical to this sector of the industry than with modular or mobile units. Not only are they required to be the salespersons, but because the erection and finishing procedure is more complex and time consuming, their building skills need necessarily be of a higher order. Frequently a builder/dealer using prefabricated components produced by a high-volume factory is a converted "stick builder." He has found that fewer financial risks exist when price and availability are guaranteed by the factory and when the sale is the primary source of assured profit.

Panelized homes vary in a much wider price range than other forms of industrialized housing. The average house might be around \$18 to \$22 per sq ft, with total construction cost in the \$30,000 to \$60,000 range, but some manufacturers produce more expensive models. Deck House of Acton, Mass., produces panelized houses making use of mahogany for millwork and trim, which are as much as 5000 sq ft in area and cost as much as \$150,000.

Other techniques of industrialized housing

Under this heading are lumped any other techniques, whereby housing can be produced by an industrialized process. Our earlier definition stated that this implies that a minimum of about 30 percent of the dwelling unit is prefabricated in its final form.

Technics: Industrialized housing



Pre-cut homes represent a borderline but important method of industrialization. The pre-cutting operation consists of cutting studs, joists, and other structural members to size, pre-drilling and notching them, stacking and packing them in sequence, and thus delivering them to the construction site. Also, roof trusses and floor trusses are similarly produced and delivered; doors are pre-hung and pre-finished; plumbing walls are pre-assembled; fixtures and fittings are pre-finished and connected. The real importance here is not whether the sum of the pre-built portions adds up to the prescribed minimum of 30 percent of total cost to qualify for definition as industrially produced, but that the total building operation is highly organized and optimized, thereby falling within the management approach we have defined as Systems Building.

Pre-cut housing accounted for an estimated 400,000 units in 1976, 20 percent of the total. The category does include some non-wood and other hybrid techniques such as geodesic structures, barn structures, etc., and an interesting phenomenon: pre-cut log home construction.

The log home manufacturing industry consists of some 40 producers who deliver approximately 20,000 housing units per year. 80 percent of these are primary residences. Traditional Living, Inc., Hartland, VT, is the largest producer and has four factories with a total production capacity of 2000 homes per year. The company's production facilities are currently operating to capacity, with an eight-month back-log (sic).

High-rise concrete panel and concrete box methods of prefabrication are also included here. They play virtually no significant statistical part in currently built U.S. housing. These systems, including many imported from Europe such as Tracoba, Wates, and Balency, and some developed in the U.S. such as Zachry, Shelley, and Townland, were the darlings of Operation Breakthrough and Wall Street in the late 1960s and epitomized industrialized housing at that time. Yet, although they require enormous capital outlays for plant and equipment, their ultimate degree of industrialization is relatively low, usually 30 to 60 percent.

These systems require vast market aggregation, long-term advance planning, emphasis on high-rise construction, and a high degree of standardization and uniformity at optimum economic levels. None of these factors is in step

with current trends in U.S. housing demand and policy, though a different situation prevails in the Communist bloc. Of the 20 or so companies that entered the market in the late 1960s, only a few remain. These are reported to be facing hard times and providing units to limited markets. Much of the equipment and technology which was imported from Europe at that time has now been re-exported to the Middle East, a madness the author can not understand.



Apparently the Middle East cultures call for durability and solidity such that heavy concrete components appear to be a suitable answer to housing needs. Yet several factors there are quite unfavorable: cement and steel supplies; aggregate and water availability; road conditions; truck, crane and equipment supply and maintenance; labor skills and availability; and factory equipment operation and repair.

The Communist bloc countries, on the other hand, are in an ideal position to make use of high-rise concrete panel and box construction techniques, as the factors cited above as being necessary are all in evidence. The author is a member of a U.S. delegation in an exchange program for industrialized housing cooperation with the Soviet Union, and toured the USSR in April. The Soviets have launched far-reaching and ambitious programs to provide housing for a broad populace across vast areas.



A finished pre-cut log home can look like Vermont Log Buildings' dwelling (above), and have natural-look, down-home warmth (left) that consumers love. Log homes are produced from Alaska to Florida, from Florida to Maine. Authentic Homes' version in Wyoming (below left) shows regional style. A pre-cut solid cedar home (bottom left) by Lindal Cedar Homes of Washington is popular for recreational dwellings.

High-rise prefabricated concrete panel construction has reduced demand in Western world. One example in Yonkers, New York, was designed by Renato Severino for Module Communities Inc./Tracoba System, New York.



Technics: Industrialized housing



Prefabricated concrete boxes and panels are widely used in Communist countries for high rises, such as the apartments (above) in Russia.

Soviet factories have been set up to produce standardized concrete panel and box components to provide housing in numbers unprecedented in the West. There are approximately 400 factories across the Soviet Union producing almost 1.5 million housing units per year. Factory production techniques are quite sophisticated, although management of programs and quality of finishes receive less emphasis than in the West.

The consumer and industrialized housing

The real world of industrialized housing is very highly marketing oriented. Decisions among housing producers regarding matters of design, production, finance, and other company policy are above all related to market demands and conditions. The consumer is King.

This means that the slightest indications of consumer preferences, needs, shifts, or demands are instantly translated into a response by the producer in the form of a revised product to meet these indicated items. Very often this results in a chicken/egg dilemma. For example, much of the housing in the east has a "colonial" look with fake shutters fixed permanently to the siding beside a window and destined never to open or shut. Why have shutters that don't shut? The consumer wants them because he thinks all good builders provide shutters, and the builder provides them because he thinks all consumers want shutters. Ergo, shutters become the vernacular.

The author has witnessed the design process at work in the mobile home industry. One of the "big three" mobile home manufacturers produced about 25,000 homes in 1976 out of 33 factories across the United States. All design, engineering, and documentation is carried out in the company's headquarters in the Midwest by a staff of three, not one of whom has had architectural training or experience. The design of housing units is not a rational process, it is an evolutionary one, where a home will hit the market and feedback from the market will dictate the evolutionary revision of the design of that model of home. This feedback comes from salesmen transmitting consumer opinions, lists of ideas borrowed from a competitor's product, suggestions from suppliers of products to the manufacturer, and strokes of genius from the company president or members of his immediate family.

Architects and industrialized housing

The author has estimated that Industrialized Housing is responsible for about 75 percent of all housing produced in the U.S. Further, it is understood that architects are responsible for fewer than 2 percent of all housing produced. Why the disparity?

In essence, architects are ignorant of the industrialized housing industry, oblivious to it, forgotten or avoided by it, and generally of little relevance to it. This is not the fault of the housing industry but of the "architecture industry." Architects must differentiate between these two and recognize that their skills must be modified such that they can be of relevance, and perceived relevance, to the processes of housing production and delivery.

Every year the newest homes are exhibited in a series of housing shows around the country, and attendance at one of these is a mandatory part of any education process related to industrialized housing. The biggest ones, held in South Bend, Harrisburg, Tulsa, Los Angeles or Louisville may have 500 to 600 housing units on display. Here one sees consumer response directly; one can remain inside a typical display home and record the responses of the people as they pass through. Spatial excitement may be subconsciously appreciated but the tizzied-up bathroom wins most vocal accolades. Raised bathtubs with carpeted steps leading to them through velvetlike stage curtains are quite popular. Kitchens with gadgets and gimmicks are key draw-cards, yet no one complains about boxiness, fake-ness, or schlock. People simply do not relate to housing in the way architects expect them to; perhaps that explains the acceptance of the visual blight in mobile home parks.

But, at the same time, consumers are quite emphatic about their wants and needs. With the energy and cost conscious construction approach to housing in 1974-75 there came a series of basic, "no-frills" homes offered by many manufacturers. Disaster! People want frills.

Owens-Corning conducts an annual series of surveys of trends in consumer attitudes in the manufactured housing industry. Trends from 1969 to 1974 indicate a constant demand for bigger homes; more appliances such as washers, dryers, freezers, and self-cleaning ovens; more storage, drawer and closet space; and more amenities and luxuries such as fireplaces, outdoor living areas, air-conditioning, garages, extra insulation, high quality siding and shingles, and insulated doors and windows.

There is no explaining or accounting for tastes in housing of the American consumer. He prefers woodsy finishes on the West Coast, colonial revival on the East Coast, and adobe in the South. He has finicky demands and unpredictable demand trends. His taste is abhorred by architects, which matters neither to the consumer nor producer as the housing will be built and purchased regardless.

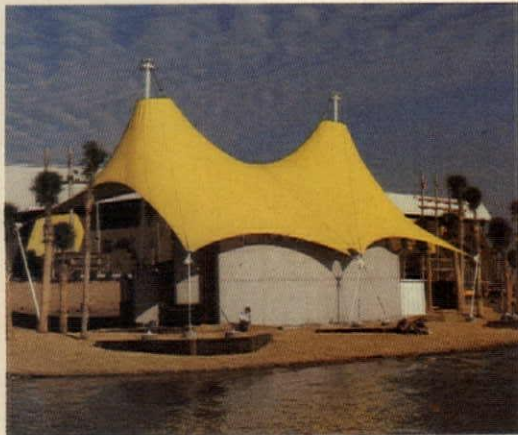
Energy efficiency, value engineering, code compliance optimization, real estate development and financing, and many other technical and managerial roles, not normally included in architects' repertoires, have recently been proved by architects to be effective in the housing industry.

The author believes implicitly that architectural skills and backgrounds can be of immense value to the industrialized housing industry, but the gap between these two worlds must be recognized, analyzed, and rationally resolved. This task is a responsibility of the architecture profession. □

RHYTHMICAL

An Eye-Catching Stage Shelter By Helios Tension.

This tensioned membrane stage shelter at the Florida State Fairgrounds at Tampa is both beautiful and practical. Besides forming a backdrop and shelter for performers, it serves as a highly visible landmark for the fairgrounds. It's exciting curvilinear shape though light and delicate in appearance is exceptionally strong. It has been thoroughly engineered to withstand the rigors of hurricane force winds, rain and ultra-violet rays of the sun.



When your imagination calls up dramatic soaring shapes or great enclosed spaces, Helios Tension Products are the people to bring your ideas into existence. We're specialists in helping architects produce innovative membrane structures. We can tell you if your design concept can be built and exactly how. Our expertise includes design and engineering, fabrication and erection. We offer a total comprehensive service unmatched in the U.S.

If you have a project in mind, or simply would like more information, write or call us: Dept. P7, Helios Tension Products, Inc. 1602 Tacoma Way, Redwood City, CA 94063. Telex 345590 Phone (415) 364-1770



HELIOS TENSION PRODUCTS, INC.
Soft Shell Structures Division

Circle No. 321, on Reader Service Card



Caption: Amphitheater Stage Shelter, Florida State Fairgrounds, Tampa. Project Architects: Robbins & Associates, Architects, Inc.

Exclusionary zoning law upheld—Part II

Bernard Tomson and Norman Coplan

This second of a two-part article presents the conclusion of the Court in evaluating the validity of the zoning ordinance of Arlington Heights, IL.

In last month's column, we discussed the decision of the United States Supreme Court in *Village of Arlington Heights v. Metropolitan Housing Development Corporation* in which that Court ruled that the enforcement of a zoning ordinance which had a racially discriminatory impact did not violate the Fourteenth Amendment of the United States Constitution in the absence of proof that a discriminatory purpose had been a motivating factor in the adoption and enforcement of such ordinance.

In reaching its conclusion that no discriminatory objective was a motivating factor in the adoption of the zoning ordinance under attack, the Supreme Court considered the nature of evidence that would establish such motivation. The Court said:

"Proof of racially discriminatory intent or purpose is required to show a violation of the Equal Protection Clause.

"Determining whether invidious discriminatory purpose was a motivating factor demands a sensitive inquiry into such circumstantial and direct evidence of intent as may be available. The impact of the official action—whether it 'bears more heavily on one race than another' . . . —may provide an important starting point. Sometimes a clear pattern, unexplainable on grounds other than race, emerges from the effect of the state action even when the governing legislation appears neutral on its face. . . . The evidentiary inquiry is then relatively easy. But such cases are, rare. Absent a pattern as stark as that, . . . impact alone is not determinative, and the Court must look to other evidence.

"The historical background of the decision is one evidentiary source, particularly if it reveals a series of official actions taken for invidious purposes. . . . The specific sequence of events leading up to the challenged decision also may shed some light on the decision maker's purposes. . . . For example, if the property involved here always had been zoned R-5 but suddenly was changed to R-3 when the town learned of (petitioner's) plans to erect integrated housing, we would have a far different case. Departures from the normal procedural sequence also might

afford evidence that improper purposes are playing a role. . . .

"The legislative or administrative history may be highly relevant, especially where there are contemporary statements by members of the decisionmaking body, minutes of its meetings, or reports."

The Court then considered the evidence as to whether under any of the indicia above quoted it had been shown that a discriminatory motivating factor existed in the adoption or enforcement of the zoning ordinance or in the refusal of the Village to modify it. The Court said:

"The impact of the Village's decision does arguably bear more heavily on racial minorities. Minorities comprise 18 percent of the Chicago area population, and 40 percent of the income groups said to be eligible for Lincoln Green. But there is little about the sequence of events leading up to the decision that would spark suspicion. The area around the Viatorian property has been zoned R-3 since 1959, the year when Arlington Heights first adopted a zoning map. Single-family homes surround the 80-acre site, and the Village is undeniably committed to single-family homes as its dominant residential land use. The rezoning request progressed according to the usual procedures. The Plan Commission even scheduled two additional hearings, at least in part to accommodate MHDC and permit it to supplement its presentation with answers to questions generated at the first hearing.

"The statements by the Plan Commission and Village Board members, as reflected in the official minutes, focused almost exclusively on the zoning aspects of the MHDC petition, and the zoning factors on which they relied are not novel criteria in the Village's rezoning decisions. There is no reason to doubt that there has been reliance by some neighboring property owners on the maintenance of single-family zoning in the vicinity. The Village originally adopted its buffer policy long before MHDC entered the picture and has applied the policy too consistently for us to infer discriminatory purpose from its application in this case. Finally, MHDC called one member of the Village Board to the stand at trial. Nothing in her testimony supports an inference of invidious purpose."

The determination of the United States Supreme Court has been considered a major setback to those groups who are seeking to introduce low-cost, integrated housing in middle class suburban areas. This decision not only restricts the use of the federal courts in suburban zoning challenges, but will undoubtedly set a general climate that may well filter down to state legislatures and state courts. Although the decision of the Court, since it is based upon the Federal Constitution, is not binding upon state courts in respect to the interpretation of their own constitutions, the rationale of the Court cannot help but influence the thinking of those state courts.

The struggle between those who believe that the suburbs may utilize zoning ordinances and regulations as a means of protecting a community's quality and character and those who believe that the suburbs should be required to aid in the solution of inner-city problems by opening their doors to low-income and racially integrated housing continues in many jurisdictions. There is little doubt, however, that the impact of the United States Supreme Court decision will be to aid the former and discourage the latter. □



Robin Hood Dell West, Philadelphia, Pa. • Architects: John H. MacFadyen and Alfredo De Vido, New York • Associate Architect: I. Demchick, Philadelphia, Pa. • Roofing Contractor: Warren-Ehret-Linck, Philadelphia, Pa.

TCS...THE LOGIC OF ITS USE

Rarely if ever has metal roofing been employed with more stunning visual impact than on Robin Hood Dell West, the Philadelphia Orchestra's new summer home, which will also serve as a creative center for other groups in the performing arts.

In specifying over 80,000 square feet of TCS (Terne-Coated Stainless Steel) on this exciting structure, the architects were primarily influenced by several practical as well as aesthetic considerations. Among them was the material's unsurpassed durability which is measured in generations rather than years. They were also aware that TCS weathers naturally to a uniform and attractive warm gray; that, properly installed, it will never need maintenance; and that it is highly resistant to even the most severe corrosive attack.

Circle No. 316, on Reader Service Card



FOLLANSBEE
FOLLANSBEE STEEL CORPORATION
FOLLANSBEE, WEST VIRGINIA

Products and literature



Upholstered stacking chairs

Upholstered stacking chairs. Metal frames are finished in bright or satin chrome, or epoxy colors. Chairs are available with standard legs, sled legs, or cantilever legs, and a wide choice of upholstery fabrics and colors. They stack 20 high on the floor. Fixtures Manufacturing Corp.
Circle 100 on reader service card

Solar collector. Parabolic mirror focuses sun's rays on a stationary black tubing. Mirror, rotated by a synchronous drive, makes one revolution per day, faces the sun from sunrise until sunset. The collector has no seals or flex connections, and it is light weight. ZZ Corp.
Circle 101 on reader service card

Perspect-Aid™. A device for executing perspective drawings to scale. According to the maker, it eliminates the complicated and time-consuming layouts, projection lines, and measurements traditionally required when preparing perspective drawings. Unit features pivoting vanishing points and a choice of diminishing scales. Units are precision drawing tools, 20-in. long, machined from high-impact styrene with silk-screened legends. They are packaged with two pivot points and instructions. Edlund Enterprises.
Circle 102 on reader service card

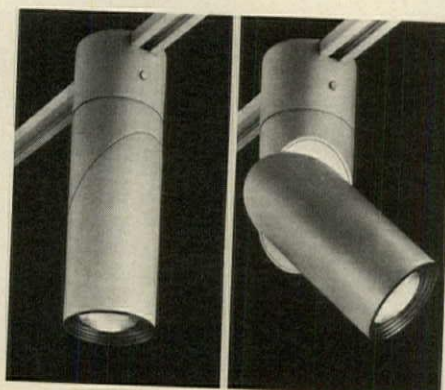


Acrylic doorpulls

Acrylic doorpulls come in clear and colors, including white. Colors are solid throughout and will not fade or age. Back-to-back mounting system for installation on glass, metal, or wood doors. Forms & Surfaces.
Circle 105 on reader service card

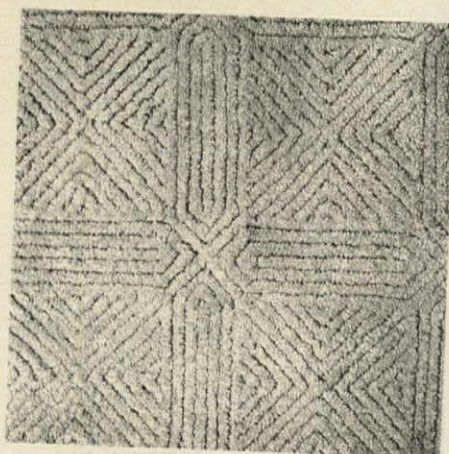
Standing seam roof system is designed for low-profile buildings. Roof is composed of factory formed panels which are interlocked. Using a panel seamer machine, the interlocked joints are seamed forming a 3-in.-high rib on the roof. Completed, the roof becomes a complete, one-piece membrane. Components use dense thermal blocks of extruded polystyrene in combination with fiberglass insulation and vapor barriers. Varco-Pruden Building System.
Circle 106 on reader service card

Pre-engineered elevators with solid state controls are suitable for buildings up to 15 stories high. Car and entrance dimensions, location of controls, meet HUD standards for use by handicapped. Otis Elevator Company.
Circle 107 on reader service card



GeoMetrik

Hand dryers are remote or surface-mounted. Surface-mounted model features 1/4-in. cast aluminum cover with antique pewter finish. Both models use jet-engine principle of air compression. There are no electrical heating elements or coils to burn out, units have only three moving parts. Humphrey, Inc.
Circle 108 on reader service card



Ground Graphics

Ground Graphics in 100 percent wool can be incorporated in a rug or executed as carpeting. Designs are achieved by a low loop recessed within a fully sheared field. V'Soske.
Circle 103 on reader service card

GeoMetrik. Track lighting fixture is an integrated unit that fits flush to the ceiling or wall. Posts, harnesses, wires, connectors, and other paraphernalia are completely eliminated from view. Fixture's shape is totally adjustable: base swivels 360 degrees and the lamp tube swivels another 360 degrees diagonally. Other shapes available include spheres, cylinders, octagons, fluted cylinders, and continental and universal tube styles. TrakLiting, Inc.
Circle 104 on reader service card

Mobile filing and storage system. The manual-assist "Dial-An-Aisle"™ design provides a gear-train arrangement whereby a force factor of only 1/2 lb hand pressure on the crank of the activating wheel will move 1000 pounds of weight. 1.5 revolutions of the front disc drive are needed to move a unit one ft. Sizes range from 6 to 30 ft in length and are available in a variety of heights and widths. The system is designed for industrial use, storage and filing of office records, computer tapes, library books, medical records, and more. Spacesaver Corporation.
Circle 109 on reader service card

Econo Jet whiteprinter/blueprinter can be operated either as a desk-top or wall-mounted unit. Compact (9"x60"x12 3/4"), it has a printing width in excess of 42 in. by any length and a maximum speed of 9 ft per minute. Teledyne Rotolite.
Circle 110 on reader service card

Barrier-free handwash facility provides full access and use for disabled persons, including those in wheelchairs. All piping is contained within the recessed pedestal and bowl. There are no outboard valves to be piped through the wall, it is vandal-resistant, and uses a minimum amount of water. Bradley Corporation.
Circle 111 on reader service card

Permalite direct-to-steel fire protective material is a spray-applied, Portland-cement-base material for structural steel. Application is by any one of several plaster spray machines. Most thicknesses can be applied in one working day from one scaffold set-up with one clean-up, states maker. Grefco, Inc.
Circle 112 on reader service card
[continued on page 92]



CAYWOOD•NOPP•WARD, Architects & Planners

The real beauty of Pella Wood Folding Doors is their smooth flowing action.

A concealed steel spring hinging system is the secret of Pella's smooth, responsive operating action. This system creates equal tension on each panel throughout the door which imparts a "live action" feeling when opening or closing it. The panels spread more evenly when open, stack compactly when closed. They're hung on double nylon rollers which maintain proper balance, minimize sway, and eliminate noisy metal-to-metal contact. Pella Folding Doors are available in a selection of high quality veneers, or vinyl finishes, over a stabilized wood core.



For more detailed information, send for your free copy of our full color catalog on Pella Wood Folding Doors. See us in Sweet's General Building File, call Sweet's BUYLINE number, or look in the Yellow Pages under "doors", for the phone number of your Pella Distributor.



FREE Catalog! Please send me your catalog on Pella Wood Folding Doors. I would also like information on: ☐ Sliding Glass Doors, ☐ Casement Windows, ☐ Double-Hung Windows, ☐ Awning Windows.

Name _____

Firm _____

Address _____

City _____ State _____ ZIP _____

Telephone _____

Mail to: Pella Windows & Doors, Dept.T35G7 100 Main St., Pella, Iowa 50219
Also available throughout Canada.

© 1977 Rolscreen Co.



Wallcoverings



Shingl-Wood

Wallcoverings. Powdered cork is glued to a vinyl background. After the design is delineated, a coat of latex paint is applied. A treescape and a cloud design, as well as several geometric designs are available. Coverings come in natural sand or custom colors. First Editions Wallcoverings & Fabrics, Inc.

Circle 113 on reader service card

Shingl-Wood is an aluminum siding that is said to look and feel like wood shingles. It is coated with a pollution-resistant vinyl finish in a wide range of colors. Alcan Building Products, Div. of Alcan Aluminum Corp.

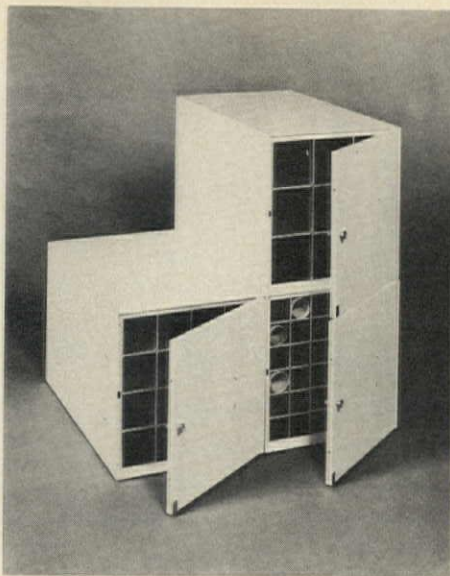
Circle 114 on reader service card

Smoke detector and automatic door control. Designated the Easy Swing Smok-Check™ the electro-mechanical unit requires only a single energy source. It may be wired for individual room-to-corridor door control, or for zone control. The compact unit mounts on a standard 2-in. door frame and is available with interchangeable ionization or photoelectric smoke detector modules. Rixson-Firemark, Inc.

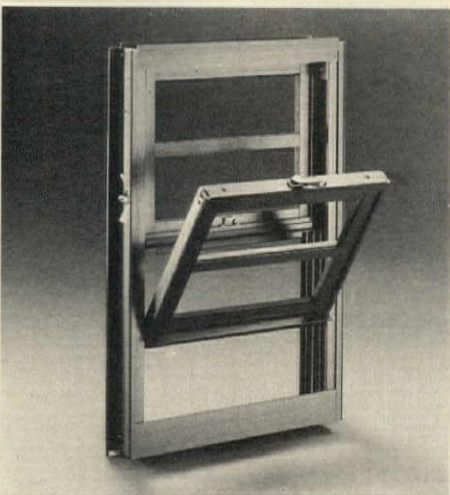
Circle 115 on reader service card

Little Guzzler yard drain is a mini-catch basin of cast iron used singularly or in groups in small grass areas around buildings, walks, and drives. Drains may be used as a water inlet or outlet for drainage under walks. Top opening is 6"x1 3/4". A removable fiberglass pouch on a stainless steel wire frame cleans drain of debris. According to maker, one unit will drain from 500 to 1000 sq ft of grass area. Polyphase Corp.

Circle 116 on reader service card



Replacement window



Modular files

Replacement window. Series 400 double-hung, aluminum tilt replacement window is custom-engineered for each job then manufactured to specifications. The Series is also available as a single-hung, triple-hung, and thermal window. It fits opening sizes up to 5'-6"x10'-0" (2-lite) and 5'-6"x15'-0" (3-lite), and can be used in frame, masonry, and curtain wall construction. Other features include: all-tubular sash members; a "tilt-in" design; baked-on paint finishes in a variety of colors. Graham Architectural Products Corp.

Circle 117 on reader service card

Insulated wall panel. Kor/Met I, is a sandwich-type panel with a rigid polyurethane core. Metal surfaces on the interior and exterior are made from 26-gauge steel which has been embossed and color-coated with a baked-on enamel. The panel uses a tongue-in-groove joint with a factory applied sealant. The 3-in.-thick panel has a .05 U value. Armco Steel Corporation.

Circle 118 on reader service card

Mini-Bricks. About one-seventh the thickness of a standard brick, the Mini-Bricks come in sizes 7/16"x7 1/2"x2 3/16" and 7/16"x7 7/8"x3 5/16" and in a wide selection of colors and glazes. They are said to be suited either for fascia or paver applications. Pacific Clay Building Products.

Circle 119 on reader service card

Modular files for rolled documents. Steel units have 9-, 16-, or 36-tube sections each and come in 24-in. to 60-in. widths. Cabinets can be used singly in a horizontal or vertical position, or they can be stacked to form a permanent file bank. Separate bases are available. The square tubes within the cabinets are of heavy fiberboard construction with aluminum reinforcement. Plan Hold Corporation.

Circle 120 on reader service card

Literature

'Evolution of Masonry Construction in American Architectural Styles.' Written by Maximilian L. Ferro, a practicing architect, the 44-page booklet contains 90 photographs and illustrations. It is of particular interest to architects and others involved in the restoration and preservation of buildings or neighborhoods and may be obtained for \$1 from Sermac Surface Maintenance Systems Division, Service-Master Industries, Inc., 2300 Warrenville Road, Downers Grove, IL 60515.

Circle 200 on reader service card

Featherrock® comes from the Mono Craters located in the Sierra Nevada Mountains. While rugged and heavy in appearance, it is light in weight—by volume only one-fifth the weight of granite. Natural stone veneers are available in two colors, two textures, and combinations of these, or in 32"x48" or 48"x96" panels that can be sawed, drilled, screwed, or nailed, and in custom sizes. Each panel facing is hand set and bonded to plywood. Brochures illustrate uses, show details. Featherrock®, Inc.

Circle 201 on reader service card

'Plen-Wood System Manual' shows construction details of the plenum, charts construction cost comparison with other methods by location. Western Wood Products Association.

Circle 202 on reader service card

'Design Group I Woodgrains.' A four-color brochure presents five new laminated plastic woodgrain patterns as well as 20 others that complete the collection. Suggested usage includes countertops, cabinetry, paneling, fixtures, and furniture. Wilson Art.

Circle 203 on reader service card

Statistical survey of manufactured housing has been released. The report contains a regional breakdown of figures and forecasts for 1977 production. National Association of Home Manufacturers.

Circle 204 on reader service card

Modular medical wall systems. The Multi-Wall II offers a pre-designed, prefabricated selection of medical services for each level of care in the general patient's room, ICU, CCU, or other patient care areas. Available from a basic patient service half module to multiple module units with total patient service capability, each system can provide an extensive range of services, including electrical, medical gases, communications, physiological monitoring, and lighting. Request Form No. 731 from Ohio Medical Products.

Circle 205 on reader service card

[continued on page 94]

The trouble with many life safety door closers is that they don't know when to quit.

Hospital and nursing home door closers are meant to block out smoke and toxic gases—that's their job. But the trouble with many of them is that they stay on duty when they aren't needed—which is 99+ percent of the time. Reading Door Closer Corp. wants to show you how this can cause real problems—in any health care institution.

When the Indian Meadows Nursing Center of Overland Park, Kansas was completed in June, 1974, it

was equipped with a competitor's standard door closers. Back then, these closers—which kept the patients' room doors shut—were an accepted way to comply with fire codes. But trouble cropped up almost immediately.

The staff found it impossible to observe their patients properly with the doors closed—a big problem, since close attention to nursing home patients is essential. The patients themselves found the doors hard to open and

didn't like the restrictive, isolated feeling they created. To remedy the situation, several patients wedged their doors open . . . which in turn violated fire ordinances and upset the city fire marshal.

The Nursing Center's administrators soon realized that changes were in order, so they studied the situation—and their alternatives—very closely. And they discovered that in the short time since their facility had been built, the state of the life safety door closer art had changed dramatically.

Finally, the decision was made to re-equip the

building with the Reading® 101 Life Safety System. Of all the automatic door closer systems available today, only the UL-listed Reading 101 offers *free swinging*. Until the fire alarm sounds, all doors connected to the system behave like they aren't connected to closers at all; they act just like normal, everyday doors. And they meet all fire and safety standards—even when patients leave them open.

The conversion was completed in late 1976. Today, the staff has easy access to the patients, the patients enjoy the increased livability of an open environment, and the fire marshal is satisfied that all regulations are being met. The administrators are pleased, too—by the significant savings they realized by choosing the Reading 101 over competitive electrically operated systems.



Why have we told you, the architect, all this?

For two reasons: first, to prove that the life safety system you specify can have a big effect on the day-to-day operation of the hospitals and nursing homes you design; and second, to show that not all life safety systems are alike, that there is one—the Reading 101—that gets the job done without ever getting in the way.

Why not call or write today for a complete information packet?

The Reading® 101 Life Safety System—from the little door closer company that's big on quality.



READING DOOR CLOSER CORP.

REAMSTOWN, PENNSYLVANIA 17567 • (215) 267-3881

Literature continued from page 92

Milestone pre-engineered metal building system.

Twelve-page, four-color brochure points out that the building system can have either a flat or gabled roofline. The structure's size can range from 1500 to over 660,000 sq ft. System is available in 40 or 50 ft bays with standard single widths of 40, 50, or 60 ft and with multiple span units from 80 to 200 ft; it can also be custom designed to user specifications. Pascoe Steel Corporation.

Circle 206 on reader service card

Acrylic sheet. Bulletin gives physical properties of Acrylite® FF, a lightweight, rigid, and weather-resistant thermoplastic that, according to maker, has virtually distortion-free clarity, and can be easily sawed, machined, heat-formed, and cemented. CY/RO Industries.

Circle 207 on reader service card

'Preassembled Systems in Indiana Limestone.' Brochure illustrates systems in use, gives detail drawings, and specifications. Indiana Limestone Company, Inc.

Circle 208 on reader service card

Interlocking panel systems for metal roofs, canopies, walkways, ceilings, and sub floors are featured in brochure, which also includes specifications, typical details, design data, and span load tables. Parkline, Inc.

Circle 209 on reader service card

Metal building panels. Brochure illustrates and describes factory-assembled wall and ceiling panels, roof decks, field-assembled wall panels, fascia and mansard panels, deep wall span panels, and Roof-Lok Standing Seam Roof System. Products are available in 12 standard colors. Architectural Panels, Inc.

Circle 210 on reader service card

Prefab insulated modular panel building systems are featured in 1977 catalog which includes detailed specifications and charts, construction details, wall and ceiling data. The panel's "stressed-skin" feature is said to provide a structural as well as an insulated modular panel. Panels are of laminated sandwich construction and incorporate a core of expanded rigid polystyrene foam insulation. Aluminum, aggregate stone, and other facings are available in a selection of colors and features. Modular Panel Company.

Circle 211 on reader service card

Outdoor prefabricated walk-in coolers and freezers can provide additional cold storage area when there is no room for needed expansion within an existing building. On new construction, outdoor prefabs can result in erection of a smaller masonry building. "Speed-Lok" panel joining system consists of three major components: a cam-action hooking arm and a complementary steel locking pin join the panels together. Two joining components are linked by horizontal steel straps, imbedded in each panel's urethane core. Insulation is with a 4-in.-thick foamed-in-place urethane core. Request copy of Handbook. Bally Case & Cooler, Inc.

Circle 212 on reader service card

'Glulam Systems' 1977 catalog contains product descriptions, technical data, and specifications, as well as design aids information and connector details for structural glued laminated timber. The catalog also contains color photographs showing glulam's design applications. American Institute of Timber Construction.

Circle 213 on reader service card

Permanent fiber glass fabric structures, such as sports stadiums, student centers, and recreation complexes, are described in booklet. "A New Way to Encapsulate Space" can be obtained from Owens-Corning Fiberglas Corp.

Circle 214 on reader service card

Washroom accessories. 32-page 1977 catalog describes complete line of products, features tables and detailed drawings, color photos, dimensional photos. Bradley Corp.

Circle 215 on reader service card

Showerheads. Four-color catalog illustrates the complete line of shower equipment and accessories, details the wide range of options, illustrates a variety of typical installations possible by various combinations. Ondine Division of Interbath, Inc.

Circle 216 on reader service card

Insulating glass. A six-page color brochure contains diagrams, tables, and photographs that illustrate the energy efficiency of insulating glass units in both residential and commercial buildings. It compares double-pane, insulating-glass windows with conventional single-pane windows in terms of U-values, heat-loss, and fuel requirements, shows how insulating glass lowers energy requirements. Thiokol Corp.

Circle 217 on reader service card

Enviro-Master® air controlling system is a single duct assembly containing a pneumatic computer sensitive to micro-pressures. Literature and details are available from Environmental Elements Corporation.

Circle 218 on reader service card

Steel roof and form decks. "A Guide to Specifying Finishes" has been added to catalog. Other features include expanded data on construction loads and information on the use of the term "Design Thickness" in place of "Gage" in references to material thicknesses. Catalog includes a deck selection chart, profiles, load tables, and other technical data, specifications, descriptive text, and profiles of composite floor decks. Epic Metals Corporation.

Circle 219 on reader service card

Glazed, quarry, and ceramic mosaic tile. 36-page color brochure illustrates entire product line, shows a variety of tile applications, describes color coordination, mural and design service, include architectural specifications. American Olean Tile Company.

Circle 220 on reader service card

Commercial carpet. Brochure describes Vectra fiber's resistance to static, its colorfastness, durability, flammability, noise reduction, and its abrasion, chemical, and stain resistance. Vectra Corporation.

Circle 221 on reader service card

Overhead doors and operators. The "Selector Guide" is useful by architects when specifying overhead doors and operators. Divided into six sections, the architect can choose the section he needs information from: door type and construction; hardware and safety features; trajectory; space conditions and track systems; operators; specifications. McKee Door.

Circle 222 on reader service card

'Designing Fire Protection for Steel Trusses' is the latest in a series of fire technology publications. Illustrated, 16-page brochure contains an up-to-date and comprehensive discussion of steel trusses: applications, building code requirements, fire protection design procedures, and exposed steel assemblies. Engineering Division, American Iron and Steel Institute.

Circle 223 on reader service card

'Planning Guide for the Color Coordinated Washroom' intended for use by architects, interior designers, and building owners, it illustrates colored accessories integrated into matched wall paneling, a comprehensive equipment check list incorporated in the planning guide details requirements for large and small public washrooms, as well as for locker rooms in gymnasiums and club houses. Bobrick.

Circle 224 on reader service card

Site furnishings. Benches and trash receptacles are made of redwood. Bench options include custom sizes, special finishes, and pedestals. Trash receptacles are available round or square with various top configurations including steel, aluminum, and wood. All redwood parts are beveled and tongued and grooved—no nails or glue are used. Outside surfaces are coated with two coats of clear sealer. Complete product descriptions, dimensions, and features are detailed in illustrated literature. Sitecraft by Rosenwach, Inc.

Circle 225 on reader service card

Rolling doors. Four-color 1977 catalog illustrates complete line of rolling doors and grilles, gives technical details, descriptive data, and specifications. The Cookson Company.

Circle 226 on reader service card

Cold storage, sound reduction, and special doors for engineered environments are illustrated and detailed in eight-page brochure. Jamison Door Co.

Circle 227 on reader service card

Wood tables/bookcases. Designs in Wood collection of tables and bookcases is illustrated and described in a full-color brochure. Included are end tables, magazine, and conference tables, and table desks with matching bookcases. All pieces are offered in Walnut and Oak veneers. Steelcase, Inc.

Circle 228 on reader service card

Steel roof deck study of the effects of steel roof deck deflections on a roofing assembly is Phase I of a continuing investigation of the problems related to inadequate attachment of insulation of steel roof decks and is the result of testing conducted by Factory Mutual Research Corp. Asphalt Roofing Manufacturers Association.

Circle 229 on reader service card

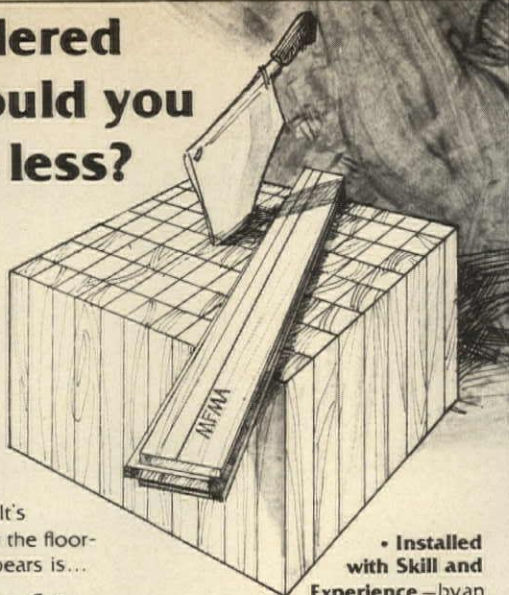
If you ordered prime, would you settle for less?

When you buy prime meat you know it's graded under uniform standards to give you the quality, flavor and tenderness you expect. So it is with the MFMA trademark. It's your assurance that the flooring on which it appears is...

• **True to Species**—Genuine hard maple with no unspecified species intermixed.

• **True to Grade and Dimension**—Uniform in appearance and performance characteristics according to MFMA enforced grading rules.

• **Mill Inspected and Warranted**—Every single shipment is inspected and accompanied by the MFMA certificate—your assurance of quality.



• **Installed with Skill and Experience**—by an MFMA Associate Member.

MFMA Associate Member.

Specify MFMA trademarked flooring—a cut above the rest.

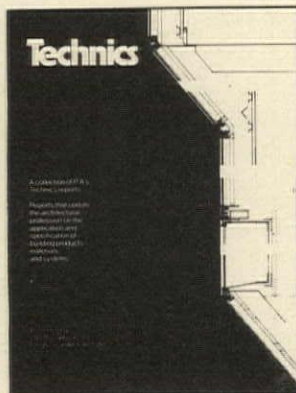


Maple Flooring Manufacturers Association, Inc.
424 Washington Ave., Suite 104
Oshkosh, Wisconsin 54901
Telephone (414) 233-1920
See MFMA Sweet's 9.22d/Ma

Circle No. 328, on Reader Service Card

Now available!

A collection of P/A's Technics Reports



A selected group of reports that update the architectural profession on the application and specification of building products, materials and systems. 44 pp., illus. \$7.50

Please send me _____ copies of the Technics Reports at \$7.50 per copy.

Name _____

Company _____

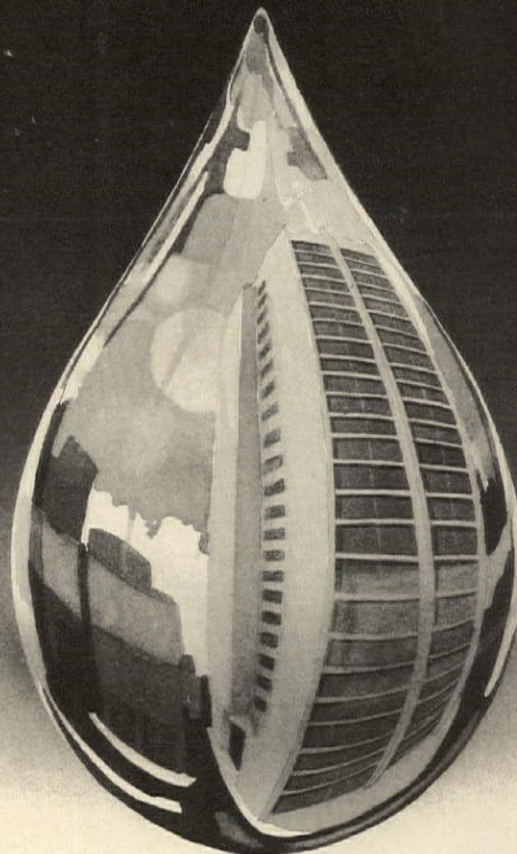
Street _____

City _____ State _____ Zip _____

Shipment will not be made unless order is accompanied by payment!

**Send to: Mrs. Eleanor Dwyer; Progressive Architecture
600 Summer Street, Stamford, CT 06904**

DRIP.



That's a sound you'll never hear when you specify the VIP Waterproofing system. With products ranging from coatings and sealants to roofing materials, VIP will protect your building from leakage, dirt accumulation, mildew, yet will allow for expansion and contraction.

All products — "Ombrella Clear," "Ombrella Semi-Opaque," "Ter-Polymer" Sealant, "Ter-Polymer" Coating, and Fire Retardant Roofing Material — Include a five-year guarantee when applied under published specifications and under normal usage. And, VIP Products require little or no maintenance.

For a straightforward evaluation of your waterproofing requirements call Ivan Morales, Jr., 305/592-6045.



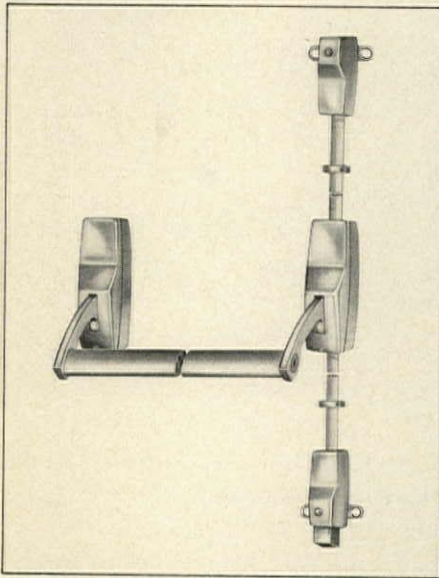
A division of Warth Paint Company
7245 N.W. 43rd St. • Miami, Fla. 33166
Phone: (305) 592-6045

See Sweet's Catalog 7.9/Vi or contact Warth Paint Company for your individual copy. For product availability, call Sweet's BUYLINE 800-255-6880. In Kansas call 913-262-5761 collect.

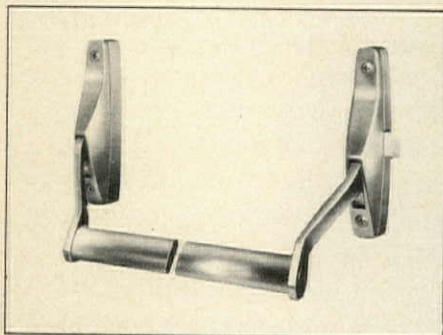
Circle No. 340, on Reader Service Card

All Russwin exit devices work beautifully.

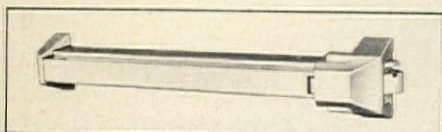
Russwin exit devices give you an easy way out on both styling and safety requirements. Let you smoothly blend function into the prevailing mood of interiors. Give you continuity in door hardware styling, throughout the building. Available in a wide selection of vertical rod, mortise and rim designs UL listed models. Narrow stile, concealed and low profile types. Add beauty to emergency duty with exit devices from the full, in-depth Russwin line. Write for more detailed information.



Exiter 780 Series UL listed heavy-duty vertical rod type



Exiter 630 Series Narrow Line heavy-duty rim type



365 Series Low Profile rim type



HARDWARE DIVISION, EMHART INDUSTRIES, INC.
BERLIN, CONNECTICUT 06037



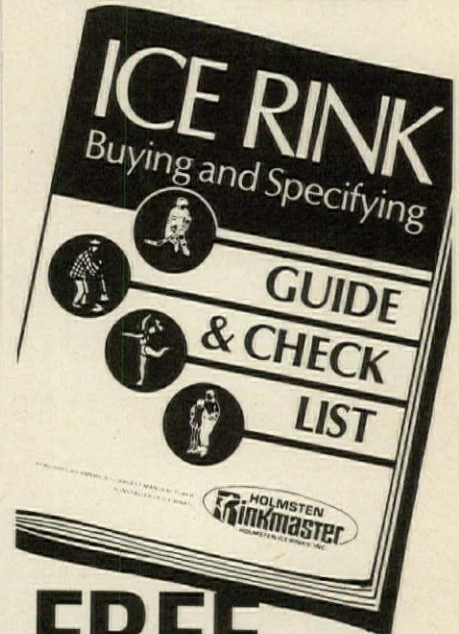
Progressive Architecture

Building materials

Major materials suppliers for buildings that are featured this month, as they were furnished to P/A by the architects.

Bronx Developmental Center, Bronx, N.Y., (p. 43). Architect: Richard Meier & Associates, New York, N.Y. Steel H-pile foundations: Bethlehem Steel. Reinforced concrete pile caps and foundations: Colonial Sand and Stone. Grade beams and foundations: Capitol Steel. Steel frame: Bethlehem Steel. Insulated aluminum panel walls: Trio Industries. Reinforced concrete over steel deck floors: Castle Concrete. Steel deck roof: Inland Ryerson. Gypsum wallboard interior surfacing: U.S. Gypsum Co. Vinyl asbestos floor: GAF Corporation. Gypsum wallboard ceiling: U.S. Gypsum. Radiant acoustic metal pan ceiling: Jacobson & Co. Insulated roof membrane assembly: AMSPEC. Coal tar pitch waterproofing: Koppers Co. Asphalt and fiberboard dampproofing: Barrett/Celotax. Fiberglass wall insulation: Johns-Manville. Foam roof insulation: Dow Construction Materials. Insulated roof membrane assembly roof drainage: AMSPEC. Extra heavy C.I. pipe for drains: Canrow Inc. Gypsum wallboard and steel stud partitions: U.S. Gypsum. Aluminum frame windows: Trio Industries. HM doors and frames: Williamsburgh. Roll-up steel overhead doors: North American Dow. Sliding steel elevator doors: Williamsburgh. Herculite glass doors for entrance: PPG Industries. Mortise type locksets: PF Corbin. Automatic OH closers: Rixson/Firemark. BUH mortise type hinges: McKinney. Tamperproof stainless steel casements: Samson. Key operated—motorized rolling door: North American Door. Mortise exit devices: Von Duprin. Oil base primer and finish coats for interior: Amsterdam Color Works; Benjamin Moore. Stainless steel institutional kitchen equipment: Frigi-Temp. Domestic type washers and dryers: Sears Roebuck. Molded fiberglass public seating: Atelier International. Four-ft-deep therapeutic pool: Paddock. Hydraulic lifts: Burlington. Sodium vapor exterior lighting: Crouse Hinds. Fluorescent and incandescent interior lighting: Lightolier. Electric distribution: Federal Pacific Electric. Jet-vitreous china toilets: American Standard. Enameled tubs and vitreous china lavatories: American Standard. Flush valves: Coyne/Delaney. Sprinklers: Grunam Sprinkler. Incremental window units baseboard radiation for heating: Shaw Perkins. Radiant acoustic ceiling for heating: Jacobson & Co. Air humidification, cooling, and tempering: Trane Co.

Thinking about an ice rink?



FREE FROM HOLMSTEN
AMERICA'S LARGEST MANUFACTURER & INSTALLER OF ICE RINKS.

This 28 page guide explains the different kinds of ice rink refrigeration systems with cost and feature comparisons.

For your free copy, just write or call us.

If you are planning a new rink... or modernizing a present ice skating facility... **this guide will save you time and money.**

Whatever your ice rink needs... from planning to the finished rink... call on the Holmsten Ice Rink organization... by far the most experienced team of ice rink engineers and installers.

SINGLE SOURCE... TOTAL RESPONSIBILITY... from the rough grade to the finished rink in operation.

HOLMSTEN ICE RINKS, INC.
2301 Como Avenue
St. Paul, Minnesota 55108
612-646-8625

Free Laundry Planning File

Send for this free planning file with detailed information on MILNOR® laundry systems. Includes:

- Description of laundry systems that save labor, fuel, water and money
- Equipment specifications
- Actual case studies
- Laundry planning checksheets for various types of institutions

Check reader response card today.

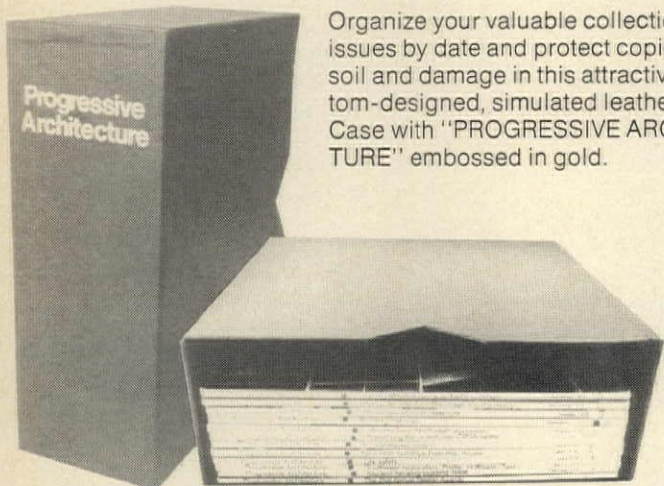
PELLERIN MILNOR CORPORATION
P. O. BOX 400, Kenner, La. 70063
(a suburb of New Orleans)
504/729-7381

Sold and serviced by
leading independent dealers
the world over



Circle No. 330, on Reader Service Card

Library Case for P/A Issues



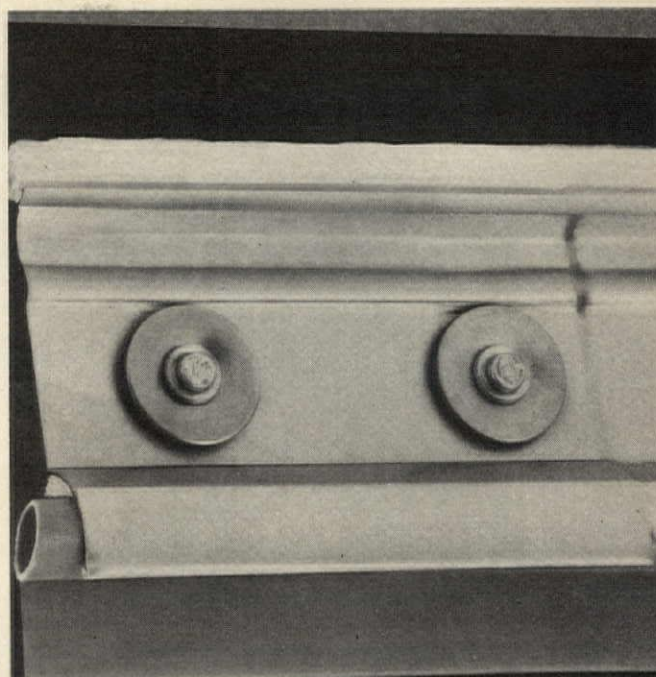
Organize your valuable collection of P/A issues by date and protect copies against soil and damage in this attractive, custom-designed, simulated leather Library Case with "PROGRESSIVE ARCHITECTURE" embossed in gold.

4.95 each 3 for \$14.00 6 for \$24.00
Canada — add \$1.00 for postage Allow 3-4 weeks delivery

Order to: Jesse Jones Box Corporation,
P. O. Box 5120, Dept. P/A,
Philadelphia, Pa. 19141

Please send me _____ PROGRESSIVE ARCHITECTURE Library Case(s)
at \$_____. I understand this price includes postage, packing
and handling. My check for \$_____ is enclosed.

Name _____
Company _____
Street _____
City _____ State _____ Zip _____



Introducing

Vinylok

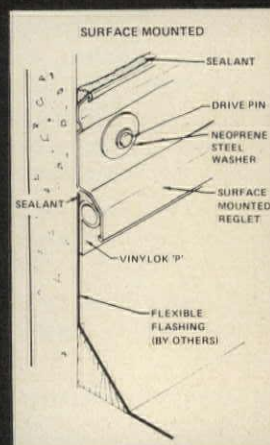
Helps Stop Roof Leaks Due to Flashing Failure

Unfortunately, *you* get blamed for all roof leaks even if you later discover that the flashing failed because there was inadequate space between the top of the cant strip and the parapet to hold the flashing.

You can prevent these failures with Fry's exclusive new VINYLOK Flashing Retainer. It permits flexible flashing to be installed in contact with the reglet. Easy. Just insert FRY "P" VINYLOK to engage the bottom of the parapet. PRESTO!

A positive retainer.
Ideal for Fry Stucco (ST),
Masonry (MA), and
Surface Mounted (SM)
Flashings. Don't take
a bum rap for leaks . . .

Write Fry for detail
sheets, prices, brochure.
801 West Milford Street
Glendale, CA. 91203
Phone (213) 245-9471



FRY REGLET Corporation

Circle No. 345, on Reader Service Card

Job mart

Situations Open

Acoustics Consultants: Building acoustics and theatre planning firm (with branch office in Canada) providing consulting services in North America, U.K., and the Middle East seeks consultants with experience in room acoustics or isolation or HVAC noise and vibration. Also limited number of openings for architecturally trained persons interested in on-the-job training in the design of theatres and auditoriums, or building acoustics. Write to William Shinnick, Consultants Collaborative/Russell Johnson Associates, P.O. Box 919, Ansonia Station, New York City, 10023.

Architect-Chief Designer: Position available with a multidisciplinary nationally and internationally known design oriented A-E firm, serving corporate, governmental, and institutional clients. Must have demonstrable skills in conceptualization of a broad range of architectural projects. Duties would require developing projects from initial client contact through design and contract documentation. Location: City of New York. Reply with resume to Box # 1361-142, *Progressive Architecture*.

Assistant-Associate Professor Of Architecture: Full Time Position for September 1977-78 Academic year. Master of Architecture & Registration required, plus several years Professional experience. Previous teaching background desirable. Opportunity

nity to broaden technology curriculum and strengthen its integration with design process. Responsibilities will encompass both Manhattan and Old Westbury Campuses. Send Vitae, including three references to: Box # 1361-150, *Progressive Architecture*. An equal opportunity/affirmative action employer.

Faculty: Two openings beginning September 1 and 16, 1977. (1) Teach and advise students in Regional Planning. Responsibilities coordinated with the Environmental Science Program. MLA, MRP or equivalent degree required. (2) Teach, advise students, conduct research in plant materials. Joint teaching-research. MLA or advanced degree in Horticulture (PhD preferred) required. In both positions; teaching and professional experience preferred, and one degree in Landscape Architecture required. Rank; Assistant Professor. Salary; commensurate with training and experience. Send resume and references to: Dr. O. E. Smith, Head, Department of Horticulture, Program of Landscape Architecture, Washington State University, Pullman, WA 99164. *Washington State University is an equal opportunity/affirmative action employer.*

Faculty Position: Beginning September, 1977. 9 month appointment. Application deadline September 1. Architectural Design teacher, with strong convictions about the interdependence of Technology and Design. Masters degree and practice experience required. Assistant Professor rank at competitive salary. Contact Arnold F. Butt, Chairman, Department of Architecture, University of Florida, Gainesville, Florida 32611.

Faculty Position: In Architectural Drafting Technology 2-yr. program. Bachelors required, masters preferred. Concentration in Arch. Tech., minor in C.E. Tech. Minimum 5 yrs. field and/or tchg. experience required. August 22, 1977. \$12,030-\$22,825. Apply: Vice President, Academic Services; Lincoln Land Community College; Springfield, Illinois 62708. An equal opportunity employer.

Faculty Positions: Openings for three faculty positions available September 1977-1978. Teaching abilities desired in architectural design, environmental technology, structures and construction. Required qualifications include professional degree(s) (doctorate desired), professional registration, work/research experience. Aptitude in computer applications and some teaching experience preferred. Send resume and references to College of Architecture and Urban Planning, The University of Michigan, Ann Arbor, Michigan 48109. The University is a non-discriminatory, affirmative action employer.

Project Coordinator: Must have designed and prepared construction documents for tenants' lease spaces in shopping malls. Experience required with tenant lease agreements, landlord imposed design criteria, adherence to local regulatory approvals, coordination of Owner-provided materials, fixtures, etc. Professional registration not required. Send Resume to: Wukasch and Associates, P. O. Box 7788, Austin, Texas 78763.

Project Designer: A leading, design-oriented A-E firm with diverse, nationwide practice, serving major corporate, governmental, and institutional clients seeks imaginative design architect with five to ten years experience, to work directly with design partner in development of concepts, coordination with clients, and control of detail refinement.

Must have been associated with design of one or more prominent buildings and be able to substantiate personal design contributions. Excellent opportunity for growth with firm. Replies will be handled confidentially and must contain sufficient information to establish a basis for further discussion. This position is open at midwest headquarters only. Send resume and other data to Box # 1361-151. *Progressive Architecture*.

Volunteer VISTA: Architects/planners needed for VISTA projects in U.S. Housing projects, design of schools, hospitals, community centers, rehab., university teaching, regional planning, etc. Expenses paid: travel, medical, vacation and living. U.S. citizens, singles or couples only. Information: Cynthia Seck, ACTION, Box A-2, Washington, D.C. 20525. An Equal Opportunity Program.

Situations Wanted

Architect: CSI 30 years diversified experience. Oregon, Alaska registration. Experienced with prefabrication, Arctic design, specification writing, project coordination, management. Supervised staff of fifteen. Five years private practice. Seeking challenging permanent position. Would consider association of partnership. Prefer northwest or northeast. Reply Box # 1361-143, *Progressive Architecture*.

Architect: NCARB, AIA, Penn State graduate, twenty years diversified, comprehensive, quality experience. Organizational, Administrative, Client Relations, Supervisory abilities. Capable of directing all practice phases. Extensive experience in Commercial, Medical, and Educational facilities, Schematics, Design Development, Construction Documents, Negotiating, Construction Supervision. Seeks permanent responsible position with progressive quality organization. Box # 1361-152, *Progressive Architecture*.

Architect: U.S. Citizen, family, 20 years diversified, comprehensive quality international experience all practice phases. Creative designer/delineator. International awards. Work includes as ex-patriate Europe, Africa, Iran, Middle-East, U.S.A. Publications. Desires responsible design position with potential in ethical, progressive firm. Overseas or domestic. Box # 1361-153, *Progressive Arch.*

Architect: 28, NCARB, Associate with Northeast architectural/planning firm. 5 years experience in all phases of public and private work with concentration on design, production and administration. Mature, efficient and productive. Seeking career opportunity with design conscious firm. Will relocate. Write Box # 1361-154, *Progressive Architecture*.

Architect: 32, NCARB, Registered Ohio and Florida, 7 years varied professional experience with major emphasis in Construction Drawings, Specifications and Administration, primarily institutional and educational facilities, seeks to relocate to Midwest and assume responsible position such as Project Architect. Resume on request. Reply to: P.O. Box 1534, Largo, Florida 33540.

Retired Architect: Corporate officer with multi-billion dollar expertise in design, finance and administration of industrial, hospital, commercial and educational buildings. AVAILABLE as consultant and advisor to developing countries or any other interested party on a most favorable basis. Want help and assistance? Contact Box # 1361-155, *Progressive Architecture*.

ARCHITECTURAL OPPORTUNITIES

Our continued growth as one of the nation's largest designers and builders of hospitals enables us to offer unique and challenging opportunities for experienced architects. An environment where an individual's success and growth is based on his performance and capability to produce positive results should be of interest to you if you are seeking career and personal growth.

Candidates for these positions should be: degreed architects experienced in all phases of architecture with several years of practical experience.

We offer a 100 percent company paid, comprehensive benefit package and an attractive working environment in our suburban St. Louis headquarters.

For further details, write D. A. Fittal in full confidence or call 314/567-9000 to arrange a confidential interview.

Equal Opportunity Employer M/F



Successful, Expanding New York-Based National Interior Design Firm: Engaged in several related fields desires to establish a relationship with other interior design or architectural firms in other areas of the country. Box No. 1361-156, *Progressive Architecture*.

Visiting Professor: Mechanical/electrical professional engineer. Registered several states and NEC Certificate of Qualifications. National authority in energy conservation, building systems retrofitting, solar energy and construction specifications. Eighteen years design experience in all construction—hospitals, industrial, commercial, etc. Seeks appointment teaching environmental systems in school of architecture. Reply Box # 1361-148, *Progressive Architecture*.

Architectural Services

Architectural Arts by Vathauer Studios: Architectural renderings, scale models, graphic coordination for sales offices, displays and design. Prompt service coast to coast. Offering quality workmanship at budget prices. Send for brochure. ARCHITECTURAL ARTS BY VATHAUER STUDIOS 2115 S.W. 2nd AVE., Ft. Lauderdale, Florida 33315. Tel. (305) 523-1312.

Atlanta Architectural Arts: The finest in architectural renderings and illustration. Scale models, photography, and related services available. Send today for our beautifully illustrated brochure! Prices on request. Atlanta Architectural Arts Inc., Box 52525, Atlanta, Ga. 30305—Or call (404) 432-3863.

Architectural Exam Preparation Guide: Includes comprehensive, detailed study schedule and exam

subject breakdown, with tips on taking advantage of the inherent defects in Multiple-guess formats, spotting intentionally misleading questions, passing oral interviews. Advice from over sixty former examinees. Economical, practical, concise. For information, write; *Bonus Pointers*, c/o Arts International, 165 Jefferson St., San Francisco, CA 94133.

CM Information and Workshops: To receive information call toll free 800/848-3960 (in Ohio 614/882-4388) or write CIS, Box 1-P, Westerville, OH 43081.

Professional Registration Exam Help: Maximize your score by learning; multiple-choice tactics, exam preparation strategy, twelve-month study plan, list of exam questions, passing oral interviews, what to (and not to) study, spotting intentionally misleading questions, etc. Concise. Economical. For descriptive brochure, write: *BONUS POINTERS*, c/o Arts International, 165 Jefferson Street, San Francisco, CA 94133.

Rendering Services: Top professional rendering service coast to coast. Architectural, urban, landscape, interiors, industrial, advertising illustration in pen and ink or color for the best reproduction. Portfolio by appointment. Allow maximum time for job completion. Please call Mark de Nalovy-Rozvadovski (203) 869-4598, 25 Birchwood Drive, Greenwich, Conn. 06830.

RitaSue Siegel Agency: Ms. Woody Gibson introduces creative architects, interior designers and urban planners to our international clients. RitaSue Siegel identifies and evaluates industrial and graphic designers. You are invited to submit confi-

dential resumes. Our clients pay all fees. 60 W. 55th St., N.Y.C. 10019, (212) 586-4750.

Value Management: Workshop for contractors, construction managers, engineers, owners in Washington, D.C., June 20 and Chicago, July 11. For more information call 800/848/3960 (in Ohio 614/882-4388) or write VM Workshop, P.O. Box 1-P, Westerville, OH 43081.

Vitruvius Designs Corp: Artistic renderings and scale models, for a better image. Commercial interiors from sketches to shop drawings. Regular drafting services available. Write Box 1316, Dept. PA, Radio City Sta., N.Y., N.Y. 10019, (212) 697-5499.

Notice

Please address all correspondence to box numbered advertisements as follows:

Progressive Architecture
c/o Box.....
600 Summer Street
Stamford, Connecticut 06904

Advertising Rates

Standard charge for each unit is Twenty-five Dollars, with a maximum of 50 words. In counting words your complete address (any address) counts as five words, a box number as three words. Two units may be purchased for Fifty dollars, with a maximum of 100 words. Check or money order should accompany advertisement and be mailed to Job Mart c/o Progressive Architecture, 600 Summer Street, Stamford, Conn. 06904. Insertions will be accepted not later than the 1st of the month preceding month of publication. Box number replies should be addressed as noted above with the box number placed in lower left hand corner of envelope.

DIAZIT'S DART WHITEPRINTER (BLUEPRINTER)

THE UN- INTENTIONAL BARGAIN

When we at DIAZIT designed the new, compact DART whiteprinter, it was intended to be the best in its class. That's the way it turned out, but the DART is also the lowest priced whiteprinter in its class. The UNINTENTIONAL BARGAIN!

The functionally designed DART incorporates those most wanted conveniences such as instant printing, single switch operation, forward-reverse control, and automatic ammonia pump for dry vapor development. It also has new innovations such as front and rear print delivery, built in feed shelf, stainless steel developer section for long life and low maintenance, and hi-lo vapor control switch. These features make the DART the most complete, compact and maintenance free table-top whiteprinter available. Better yet, equivalent whiteprinters cost hundreds of dollars more. Sure, we're biased, so why not find out for yourself by calling **TOLL FREE 1/800-334-6641** or by writing DIAZIT COMPANY, INC., Route U.S. #1, Youngsville, N. C. 27596 for more information on the DART and our complete line of seven ammonia and ammonia-free whiteprinters plus the name of your local dealer.

DIAZIT COMPANY, INC.
Route U. S. 1, Youngsville, N. C., U.S.A. 27596
Phone 919/556-5188



Plaster in a roll™ the no problem heavy duty wallcover that covers problem walls ...including concrete block!

Plaster in a Roll™ goes up like wallpaper over every conceivable surface including poured masonry, concrete block, plaster, expanded foam and wood.

This unique gypsum impregnated jute product bridges small voids, hides blemishes and bumps. Available in decorator colors and fabrics. Class A flame spread.

Exceptionally
durable
and affordable.

For complete
architectural
data and swatch
book, write
Flexi-Wall
Systems, Post
Office Box 477,
Liberty, S.C.
29657.
803-855-0500.

FLEXI-WALL
Plaster in a Roll™

Advertisers

AllianceWall Corp.	14
Battle Advertising, Inc.	
American Plywood Assn.	32, 33
Cole & Weber, Inc.	
Andersen Corp.	10, 11
Campbell-Mithun, Inc.	
ASARCO, Inc.	14
Clyne Co., Inc.	
Azrock Floor Products, Inc.	IFC
Glenn, Bozell & Jacobs, Inc.	
Ball Corp., Metal & Chemical Div.	42
Charles Tombras & Associates, Inc.	
Bally Case & Cooler, Inc.	35
Beaumont, Heller & Sperling, Inc.	
Cement Enamel Development, Inc.	36R1, 36R2
CED Advertising, Inc.	
Cold Spring Granite Co.	30
Kerker & Associates	
Diazit Co., Inc.	99
Neste Associates	
Dover Corp., Elevator Div.	76
Caldwell / Bartlett / Wood	
Emhart Industries, Russwin Div.	96
Horton, Church & Goff, Inc.	
Flexi-Wall Systems	99
Cook, Rueff, Spann & Co.	
Follansbee Steel Corp.	89
Group Marketing & Communications, Inc.	
Forms & Surfaces, Inc.	1
Sherrill Broudy Associates	
Fry Reglet Corp.	97
Averill Advertising, Inc.	
G.E.—Outdoor Lighting	4, 5
G.E. Advertising	
Grace, W.R. & Co.	6
Charles Palm & Co.	
Grefco, Inc., Building Prod.	31
Boylhart, Lovett & Dean, Inc.	

Guardian Industries	25
W.B. Doner & Co.	
Haworth, Inc.	2
Haworth Advertising	
HBE Corp.	98
D'Arcy-MacManus & Masius	
Helios Tension Products, Inc.	87
Hisata Design Associates, Inc.	
Hickman, W.P. Co.	36
John H. Rosen Advertising, Inc.	
Holmsten Ice Rinks, Inc.	96
Putman & Wangen, Inc.	
Kalwall Corp.	34
Synerjenn Advertising	
Kawneer Architectural Products	12, 13
Garrison, Jasper, Rose & Co.	
Koppers Co., Inc.	17 thru 20
TAC—The Advertising Company	
Maple Flooring Manufacturers Assn., Inc.	95
Biddle Advertising Co.	
Moen / Div. of Stanadyne	14
Carr Liggett Advertising, Inc.	
Olympic Stain, Div. of Comerco, Inc.	OBC
Kraft, Smith	
Pellerin Milnor Corp.	97
Peter A. Mayer Advertising, Inc.	
Progressive Architecture Bookstore	72, 73
Reading Door Closer	93
Fondren / Miller Advertising Agency	
Rixon-Firemark, Inc.	9
Motivation Dynamics, Inc.	
Rolscreen Co. / Architectural Div.	91
Kerker & Associates	
Russwin Div. / Emhart Industries	96
Horton, Church & Goff, Inc.	
San Valle Tile Kilns	73W
Weinberg Advertising, Co.	
Simplex Ceiling Corp.	36
Leschin Associates	
Sonotrol Systems Ltd.	14
Ian Roberts Communications	
Southern California Gas	72W
Doyle, Dane & Bernbach, Inc.	

Tremco, Inc.	26, 27
Carr Liggett Advertising, Inc.	
United States Steel Corp.	39
Compton Advertising, Inc.	
Uvalde Rock Asphalt Co.	IFC
Glenn, Bozell & Jacobs, Inc.	
VIP Products Div. / Warth Paint Co.	95
Durham & Associates, Inc.	
Wilson, Ralph Plastics Co.	IBC
Holmes / McKone, Inc.	

Advertising Sales Offices

Stamford, Connecticut 06904:

600 Summer Street 203-348-7531

James J. Hoverman
Director of Sales

Harrington A. Rose, Francis X. Roberts,
Charles B. Selden, District Managers

Chicago, Illinois 60601:

2 Illinois Center Bldg., Suite 1300

312-861-0880

Tony Arnone, District Manager

Cleveland, Ohio 44113:

614 Superior Ave., W. 216-696-0300

John F. Kelly, District Manager

Los Angeles, CA. 91436:

16250 Ventura Blvd. Suite 300

213-990-9000

Philip W. Muller, District Manager

Atlanta, Georgia 30326:

3400 Peachtree Road, N.E.—Suite 811

Lennox Tower

404-237-5528

Harmon L. Proctor,
Regional Vice President

Houston, Texas 77037

530 North Belt East, Suite 214

713-445-2657

R. W. Whit Jones, Representative

London, SW1H, OBH, England

14 Broadway

John Lankester, Representative

Verviers, Belgium

1 rue Mallar

Andre Jamar, Representative

Tokyo, Japan 160

Bancho Media Service

15 Sanyei-cho, Shinjuku-ku

Genzo Uchida, President